USSR

UDC 669.71.042.6

SMIRNOV, A. I., KHOMITSKIY, A. A., IVLEV, V. A.

"Effect of Crystallization Conditions on the Tightness of Aluminum Alloys"

Usadochn. protessy v splavakh i otlivkakh -- V sb. (Shrinkage Processes in Alloys and Castings -- collection of works), Kiev, Naukova Dumka Press, 1970, pp 278-285 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G185)

Translation: A brief analysis of the tightness coefficient of castings made of alloys based on Al as a function of the ratio of the metal densities in the liquid and solid states, the thermophysical characteristics of the metal, the form and viscosity of the melt, is presented. There are 2 illustrations and 1 table.

1/1

1/2 030 UNCLASSIFIED PROCESSING DATE--090CT70

TITLE--ANTIFRICTION PROPERTIES OF STEEL -U-

AUTHOR-(02)-GRISHCHUK, N.S., SMIRNOV, A.I.

COUNTRY OF INFO--USSR

SOURCE--LITEINOE PROIZOVD. 1970, (1), 23

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ANTIFRICTION MATERIAL, ANTIFRICTION ALLOY, ALLOY DESIGNATION, MEDIUM CARBON STEEL, ANTIMONY, SULFUR, ELECTRON MICROPROBE, INTERMETALLIC COMPOUND, FRICTION/(U)CAMECA ELECTRON MICROPROBE, (U)ST45 MEDIUM CARBON STEEL, (U)BROTSS555 BRONZE, (U)80LK BRASS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1377 STEP NO--UR/0128/70/000/001/0023/0023

CIRC ACCESSION NO--AP0116826

UNCLASSIFIED

2/2 030 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0116826

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ATTEMPT WAS MADE TO DEVELOP ALLOYS WHICH WOULD FORM THIN FILMS ON THE FRICTION SURFACE. FOR THIS PURPOSE STEEL 45 WAS COMPLEXLY ALLOYED WITH SB AND S SO THAT IN ITS STRUCTURE A COMPLEX SULFIDE PHASE WAS FORMED IN ADDN. TO THE USUAL PEARLITE AND FERRITE. A STUDY WITH THE MICROPROBE CAMECA SHOWED THAT SB WAS DISSOLVED ONLY IN FERRITE AND SULFIDE PHASES. WHEN THE STEEL CONTAINED SB 0.87 AND S 0.45PERCENT, THEN THE FERRITE GRAIN CONTAINED IN ITS VOL. 0.2-0.8PERCENT SB, WHILE IN INDIVIDUAL MICROVOLS. (1 M MU) THE SB CONCN. WAS AS HIGH AS 10-26PERCENT. THE SB CONCN. IN THE SULFIDE PHASE VARIED 20.0-72.0PERCENT. IT WAS ASSUMED THAT SB SUB2 S SUB3 ENTERED THE EUTECTIODS MN-SB SUB2 S SUB3 AND FES-MNS-SB SUB2 S SUB3. THE LOW M.P. OF SB SUB2 S SUB3 (540DEGREES) CAUSED THE MELTING OF THE SULFIDE AT THE FRICTION SURFACE. MOREOVER, SB FORMED WITH FERRITE FESB SUB2 M. 732DEGREES, WHEREBY IT CONTRIBUTED TO THE FILM FORMATION AT THE FRICTION SURFACE. A COMPARISON OF WEAR RESISTANCE OF SB-S STEEL (C 0.42, SI 0.36, MN 0.75, P 0.038, S 0.46, AND SB 0.60PERCENT) WITH BRONZE BR. OTSS 5-5-5 SHOWED A 3.3 TIMES HIGHER WEAR RESISTANCE FOR THE STEEL. ALSO INSERTS FROM SB-S STEEL WORKED 6-7 TIMES LONGER THAN INSERTS FROM BRASS 80LK.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--CRYSTAL FIELD PARAMETERS FOR TETRAGONAL ER PRIME3 POSITIVE CENTERS IN CALCIUM FLUORIDE -U

AUTHOR--SMIRNOV, A.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(3), 763-6

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--CALCIUM FLUORIDE, CRYSTAL, ERBIUM, EPR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0656 STEP NO--UR/0181/70/012/003/0763/0766

CIRC ACCESSION NO--AP0105635

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0105635

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CRYSTAL FIELD PARAMETERS WERE DETD. FOR TETRAGONAL CENTERS OF ER PRIME3 POSITIVE IN CAF SUB2. IN THE CALCN. OF THE POTENTIAL PARAMETERS, EPR DATA WERE USED FOR THE GROUND STATE. THE WAVEFUNCTION CAN BE FOUND IN THE CASE WHERE THE GROUND STATE IS THE GAMMA SUBT7 LEVEL FORMED FROM THE GAMMA SUB7 STATE OF THE CUBIC FIELD AND FOR WHICH G (GAMMA SUBT7) IS CLOSE TO G SUBCUB. (GAMMA SUB7). BY USING THE WAVEFUNCTION AND 2 PARAMETERS OBTAINED FROM THE STUDY OF THE OPTICAL SPECTRUM (POSITION OF THE CENTER OF GRAVITY OF THE LOWER TERM AND THE VALUE OF V SUB2 PRIME0) SINGULAR DETN. WAS MADE OF THE CRYST. FIELD PARAMETERS (V SUB2 PRIME0 EQUALS PLUS 355, V SUB4 PRIME0 EQUALS MINUS 35.8, V SUB6 PRIME0 EQUALS PLU' 53.9, V SUB4 PRIME4 EQUALS MINUS 921.4, AND V SUB6 PRIME4 EQUALS MINUS 504.5 CM PRIME NEGATIVE1), WHICH SATISFACTORILY DESCRIBE THE STARK STURCTURE PRIME4 I, PRIME4 F, AND PRIME2 H SUBELEVEN HALVES TERMS AND THE KNOWN ZEEMAN SPLITTING OF THE COMPONENTS OF THE GROUND AND EXCITED TERMS.

UNCLASSIFIED

USSR

UDC: 539.143.5:537.533.7

SMIRNOV, A. I., Kostroma State Pedagogical Institute imeni N. A. Nekrasov

"Double Bremsstrahlung"

Tomsk, Izvestiya VUZov: Fizika, No 3(130), 1973, pp 159-160

Translation: Emission of two photons by an electron as it passes through the Coulomb field of a nucleus is one of the fourth-order effects in quantum electrodynamics. This process has been repeatedly studied by a number of authors in various approximations. This paper gives the results of a theoretical investigation of the process in Born's approximation for the case of identical γ-quanta. The reaction takes the form

$$e^- + (Z_1) \to (Z_2) + e^- + \gamma + \gamma. \qquad (1)$$

The differential cross section of reaction (1) was calculated by the method of Feynman diagrams. The following expression is found for the differential cross section of double bremsstrahlung averaged with respect to the polarizations of particles, in the case of interference:

$$d\sigma = \frac{Z^2 r_0^2 \alpha^2}{4\pi^4 q^4} \frac{p_2}{p_1} Y \omega^2 d^2\omega \, d\Omega_2 \, d\Omega_1 \, d\Omega_2 \qquad (2)$$

SMIRNOV, A. I., Izvestiya VUZov: Fizika, No 3(130), 1973, pp 159-160

where Z is the atomic number; r_0 is the classical electron radius; α is the fine structure constant; q is the thermal nuclear recoil momentum; p_1 and p_2 are the absolute momenta of an electron before and after collision with the nucleus; ω is the photon energy; $d\Omega_1$, $d\Omega_2$, and $d\Omega$ are the elements of the solid angles of escape of the photons and electron; $\hbar = c = m = 1$ (m is the mass of an electron).

The matrix element of the transition Y is considerably simplified in two energy regions of the primary electron: the nonrelativistic and the extreme relativistic energy regions.

The expression for Y in the nonrelativistic region takes the form

$$Y = \frac{q^4}{\omega^4}. \qquad (3)$$

For the differential cross section of reaction (1) in this instance we get the following formula:

$$d\sigma = \frac{Z^2 r_0^2 \alpha^3}{4\pi^4} \frac{p_2}{p_1} \frac{d^3\omega}{\omega^2} d\Omega\, d\Omega_1 d\Omega_2; \qquad (4)$$

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SMIRNOV, A. I., Izvestiya VUZov: Fizika, No 3(130), 1973, pp 159-160

i. e., dz diverges as $\omega \to 0$. This is the usual infrared divergence in quantum electrodynamics which arises as a consequence of the inapplicability of Born's approximation when $\omega \to 0$.

In the extreme relativistic energy region we shall assume that all angles θ_i between the momenta of photons and electrons are equal to zero. In this case

$$Y = \frac{2}{\varepsilon_1^2 \varepsilon_2^2}(3\omega^2 + 4\varepsilon_1\varepsilon_2),\ q^2 = \frac{\omega^2}{\varepsilon_1^2 \varepsilon_2^2}. \qquad (5)$$

Here ε_1 and ε_2 are the energies of the electron before and after collision with the nucleus. For dz we get the expression

$$dz = \frac{Z^2 r_0^2 \alpha^2}{2\pi^4} \frac{\varepsilon_1^2 \varepsilon_2^2}{\omega^3}(3\omega^2 + 4\varepsilon_1\varepsilon_2)\, d^2\omega\, d\Omega\, d\Omega_1\, d\Omega_2; \qquad (6)$$

If we take $\varepsilon_1 = 2\varepsilon_2 = 4\omega = 2 \cdot 10^3$ (in units of m), then (6) implies

$$\frac{dz}{d^2\omega\, d\Omega\, d\Omega_1\, d\Omega_2} \approx 3Z^2 \cdot 10^{-18}\ \text{cm}^2/\text{ster}^3. \qquad (7)$$

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SMIRNOV, A. I., Izvestiya VUZov: Fizika, No 3(130), 1973, pp 159-160

Quantity (7) is three times the corresponding estimate made by Nadzhafov (i. M. Nadzhafov, YaF, 11, 416, 1970).

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USSR

UDC: 539.1.078

KONSTANTINOV, Yu. S., SMIRNOV, A. M.

"On the Theory of the Sideband Spin Generator at High Modulation Indices"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 4, Apr 72, pp 883-884

Abstract: The sideband spin generator is analyzed for the case of large modulation indices $\beta = \gamma h_m/\Omega$, where h_m, Ω are the modulating field amplitude and frequency respectively, and γ is the gyromagnetic ratio. It is found that the oscillations of the sideband spin generator are nonisochronous in the general case. The results show that stable spin generation can be achieved with nonuniform broadening of the NMR line of the working specimen.

1/1

USSR UDC 669.017.3

GRIDNEV, V. N., OSHKADEROV, S. P., and SMIRNOV, A. M., Institute of Metal Physics, Academy of Sciences Ukr SSR

"Features of Austenite Formation During Rapid Heating of Cold-Worked Steel KVK-42 (42Kh2NGSM)"

Kiev, Metallofizika, No 40, 1972, pp 37-45

Abstract: The effect of rapid heating rates (up to 3000°/sec) on the temperature conditions for the alpha-gamma transformation is drawn (up to 75% reduction) KVK-42 steel of the martensite class was studied. It was shown that with an increased degree of deformation there occurs a lowering of the critical point in comparison with the point for annealed steel, whereupon the effect of lowering is greater the higher the degree of deformation and heating rate. A temperature-time diagram was plotted for austenite formation in the given steel for conditions of continuous heating in the interval of heating rates from 50 to 2700°/sec. The obtained data are discussed from the viewpoint of the effect of structural defects on the kinetics of austenite formation. 6 figures, 5 bibliographic references.

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002203110003-9"

USSR

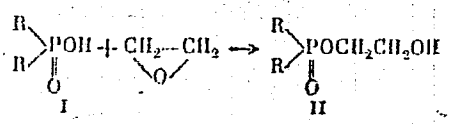
UDC 547.26'118

KARGIN, YU. N., SMIRNOV, A. N., USHCHENKO, V. P., and KHARDIN, A. P.

"Synthesis of B-Hydroxyethyl Dialkyl(diaryl)phosphinates"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 4, 1972, p 955

Abstract: The addition of ethylene oxide to dialkyl- or diarylphosphinic acid goes easily without a catalyst forming the title product as follows:



for R = CH_3, C_2H_5, C_6H_5. The reaction was carried out in tetrahydrofuran and dioxane solutions and without a solvent. The structure of the product was confirmed by elemental analysis, optical rotation, and IR spectra.

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USSR

UDC: 51

SMIRNOV, A. N., CHERVINSKAYA, L. A.

"Concerning a Problem on a Graph"

V sb. Primeneniye mat. v ekon. (Use of Mathematics in Economics--collection of works), vyp. 7, Leningrad, Leningrad University, 1972, pp 77-80 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V396)

[No abstract]

1/1

UDC 621.383:537.533.8

USSR

KORZYUK, T.G., SMIRNOV, A.N., TAUBER, A.G.

"Thermoelectric Coolers For Photocathodes"

Kholodil'n. tekhn. i tekhnol. Resp. mezhved. nauchno-tekhn.(Cooler Technics And Technology. Republic Interdepartmental Collection),1970, No 9, pp 15-17 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11A165)

Translation: The paper reports on the development and manufacture of small batches of thermoelectric coolers (TC) for photomultipliers and other electrovacuum devices. With respect to the method of heat removal from the hot junctions of thermopiles, the TC developed are divided into three groups: with forced blowing for a system of fins, with liquid heat removal, and heat removal to the mass of the object. It is shown that one-stage thermopiles reduce the temperature by 50° C and the two-stage by 50-55° C. At present, use of three-stage thermopiles is structurally inexpedient. Type R-72KM coolers for devices of 50-mm diameter are related to the first group of TC. The consumable power of the d-c for supply of coolers and ventilators does not exceed 65 watt. The temperature drop is 50° C. For devices 50-mm in diameter, a two-stage TC was developed with a reduction of temperature by 50° C and a consumable power of 25 watt. A one-stage variation of such a TC reduces the temperature by 30° C

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and the consumable power ~15 watt. A TC developed for the FEU [photomultiplier]-13 and reducing the temperature by 30° C pertains to the second group. A TC for the FEU-31 which reduces the temperature by 15° C with a consumable power ~6 watt may pertain to the third group. S.D.

USSR UDC 621.382.539.1.074

KORZYUK, T. G., OVECHKIN, V. V., PANSHIN, A. Z., RAU, L. F., SMIRNOV, A. N., TAUBER, A. G., SHCHEBIOT, U. V., YUROVSKIY, A. V.

"Use of Thermoelectric Microrefrigerator for Cooling of Gamma-Spectrometric Si(Li) Detectors"

V sb. Prikl. yadern. spektroskopiya (Applied Nuclear Spectroscopy -- Collection of Works), Issue 1, Moscow, Atomizdat, 1970, pp 223-232 (from RZh--Elektronika i yeye primeneniye, No 5, May 1971, Abstract No 5B257)

Translation: The construction and production technology of Si(Li) Gamma radiation detectors with a thickness of the sensitive region up to 10 mm are described. The spectrometric properties are studied of such detectors, which are cooled with the aid of thermoelectric microrefrigerators of temperatures of minus 40°C. It is found that such cooled detectors make it possible to realize an energy resolution of 1-1.8 percent for ^{137}Cs. Several possible and promising uses in applied spectrometry of the detectors described are shown.

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USSR

UDC 621.791.75

SMIRNOV, A. P., PAVLOV, A. S., KOLEDENKOV, A. S., and BOYKO, V. V.

"Semiautomatic Shot-Arc-Welding of VNS5 High-Strength Steel With Consumable Electrode in Gaseous Mixtures"

Kiev, Avtomaticheskaya Svarka, No 4 (241), Apr 73, pp 70-71

Abstract: The influence of the composition of gaseous protective mixtures on the strength of VNS5 stainless steel joints welded with consumable electrodes was investigated at the Gor'kiy Aviation Plant. Effects of various mixtures on dimensions of the weld form were studied on microsections of cylinders, welded on 5-mm-thick plates, in mixtures of pure Ar, Ar+He, Ar+O_2, and Ar+CO_2. Qualitatively best results were found on specimens welded in Ar+He. This is achieved as the result of the high burning stability of the arc, its high thermal energy, and the good fluidity of the metal bath. Specimens welded in pure Ar had lower strength, specimens welded in Ar+CO_2 possessed the lowest plasticity, and specimens welded in Ar+O_2+CO_2 showed the smallest angle of bend. Mixes of Ar+CO_2 and Ar+O_2 are not recommended for welding VNS5 steel. One figure, two tables, one bibliographic reference.

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USSR

YATROV, S. N., SMIRNOV, A. P., et al

"'NEFT' Automated Information Retrieval System and Prospects for Its Development"

Moscow, Nauchno-Tekhnicheskaya Informatsiya - Seriya 2: Informatsionnyye Protsessy i Sistemy; June, 1971; pp 18-22

Abstract: The authors describe a document-based descriptor information retrieval system with associative address file organization which is used with a "Minsk-22" computer at the All-Union Scientific Research Institute for the Organization, Control, and Economy of the Oil and Gas Industry. The system is designed as a reference information service for engineers and researchers in the oil industry. Descriptions are given of the information retrieval language as well as the method used to construct it (including word lists for individual fields compiled by frequency and alphabetically by computer), the method used to index input documents, and the system of algorithms and programs that serve to organize the retrieval file and to search for and distribute information.

The materials presented in the article can be applied to the design and development of information retrieval systems in other fields of industry.

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1/2 019 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--THERMODYNAMICS OF OUTER SPHERE COMPLEXES. IV. COEFFICIENTS OF THE ACTIVITY OF THE RACEMATE AND D,AND L,TRISETHYLENEDIAMINECOBALT(III)

AUTHOR-(04)-SMIRNOV, A.P., SIDOROV, P.S., RAGULIN, G.K., MIRONOV, V.YE.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 420-1

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--COBALT COMPLEX, THERMODYNAMICS, ISOMER, PERCHLORATE, NITRATE, SULFATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0330 STEP NO--UR/0076/70/044/002/0420/0421

CIRC ACCESSION NO--AP0103985

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--18SEP70

2/2 019

CIRC ACCESSION NO--AP0103985

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COEFFS. OF ACTIVITY OF THE RACEMATE, AND THE D AND L ISOMERS OF TRISETHYLENEDIAMINE COBALT(III) PERCHLORATE, NITRATE, AND SULFATE IN AQ. SOLNS. ARE DETD.; THEY ARE EQUAL IN MAGNITUDE WITHIN THE LIMITS OF 1PERCENT. THIS MEANS THEIR ABILITY FOR OUTER SPHERE ASSOCN. IS EQUAL. C. J. STEINBERG.

UNCLASSIFIED

Acc. Nr.: AP0046780

Ref. Code: UR0125

USSR

UDC 621.791.763.3:621.43.06

SMIRNOV, A. P.

"Roll Welding with Crushing of the Edges"

Kiev, Avtomaticheskaya Svarka (Automatic Welding), No 1, 1970, pp 57-58
(from Avtomaticheskaya Svarka, No 1, 1970, p 80)

Translation: This article contains a study of the technological properties and strength of muffler joints executed by seam welding with crushing of the edges. There are 3 illustrations and a 1-entry bibliography.

1/1

Reel/Frame
19790084

Instrumentation and Equipment

USSR

UDC 620.179.14

MUZHITSKIY, V. F., and SHIRNOV, A. S., Irkutsk Scientific-Research and Design Institute of Chemical Machinery

"Phase-Sensitive, Electromagnetic Flaw-Detection Method"

Sverdlovsk, Defektoskopiya, No 1, 1973, pp 12-20

Abstract: The Irkutsk Scientific-Research and Design Institute of Chemical Machinery developed the EMDT-2 flaw detector which uses a new, phase-sensitive, electro-induction method for registering the distortion of a variable magnetic field above an extended defect. Registration of the phase signal obtained as the result of vector summation of the transverse, tangential component of the field of two adjacent sections of a surface is a feature of the proposed method. The defect introduced into the constant or slowly varying field is considered as a magnetic dipole. The following advantages are attributed to the proposed method: a) high sensitivity to crack-type extended defects, b) good selectivity with respect to interfering factors such as local nonuniformities in the physical and mechanical properties of the controlled surface, and c) retention of sensitivity in the presence of layers of scale, rust, and product residues up to 3 mm thick. Sensitivity to defects increases with their depth and decreases as the gap increases between

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USSR

MUZHITSKIY, V. F., and SMIRNOV, A. S., Defektoskopiya, No 1, 1973, pp 12-20

the pickup and the surface of the metal. In order to maintain a constant level of sensitivity, and additional coil is needed whose electromotive force is proportional to the clearance. Original article has: two formulas, 12 figures, 13 bibliographic entries.

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USSR

UDC 621.791.16.037

KHOLOPOV, Yu. V. (Cand. of Techn. Sciences), SMIRNOV, A. S., MIRKIN, A. M., KASHCHEYEVA, L. P., IGNAT'YEV, A. S., and ERLIKH, M. G. (Engineers)

"MTU-0,4-4 Ultrasonic Welder for Plastics and Metals"

Moscow, Svarochnoye proizvodstvo, No 5, May 72, pp 47-48

Abstract: The New MTU-0,4-4 welder is a prototype of the MTU-0.4-3 machine with a redesigned welding head furnished with two types of mechanical oscillatory systems. The new unit is suited for welding plastic components in the radio engineering and electronics industry including micromotors, condensers, batteries, filters, cells, etc. The machine will join plastics with metals by pressing them into polymers, and will weld copper, aluminum, and nickel. The MTU-0,4-3 model has been successfully operated for several years at radio engineering plants and has shown yearly savings ranging from 5000 to 10,000 rubles. The technical specifications for the new ultrasonic model are cited. The serial production project has been assigned to the Kaliningrad Plant of Electrical Equipment. (1 illustration)
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USSR S UDC 621.791.16.037

KHOLOPOV, YU. V., Candidate of Technical Sciences, ZAYTSEV, N. P., Candidate of Technical Sciences, SMIRNOV, A. S., Engineer, SOLDATENKOV, V. A., Engineer, and ERLIKH, M. G., Engineer VNIIESO (All-Union Scientific Research Institute of Electric Welding Equipment)

"The MTU-0.4-3 Machine for the Ultrasonic Welding of Metals"

Moscow, Svarochnoye Proizvodstvo, No 5, May 70, pp 47-48

Abstract: A description is given of the MTU-0.4-3 machine for the ultrasonic welding of metals. Exploitation of the machine under industrial conditions shows that it is simple and reliable in its operation. Wear-resistant welding tips may produce up to 81,000 spot welds before servicing, and up to 250,000 before being replaced. The use of the machine in the production of K50-6 and K50-7 aluminum electrolytic condensers resulted in a 14.5% reduction of rejects, and in increased welding reliability, greater service life of the article, and a 39% increase in labor productivity. Specifications of the machine are as follows:

Power in kw	0.4
Operational frequency in kc	22±7.5%

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USSR

KHOLOPOV, YU. V., et al, Svarochnoye Proizvodstvo, No 5, May 70, pp 47-48

Contact pressure in kg	8-60
Thickness of welded articles in mm	0.01-0.2
Productivity	15-90 spots per min.
Welding tip feeding in mm	120 x 47 or 120 x 74
Gap between tips in mm	0-20
Dimensions in mm	1300 x 600 x 1235

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1/2 018 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--MTU 0.4-3 FOR ULTRASONIC METAL WELDING -U-

AUTHOR-(05)-KHOLOPOV, YU.V., ZAYTSEV, M.P., SMIRNOV, A.S., SOLDATENKOV, V.A., ERLIKH, M.G.

COUNTRY OF INFO--USSR, UNITED KINGDOM, UNITED STATES

SOURCE--MOSCOW, SVAROCHNOYE PROIZVODSTVO, NO. 5, 1970, PP 47-48

DATE PUBLISHED--------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--PATENT, WELDING EQUIPMENT, FOREIGN TECHNICAL REL'TION, ULTRASONIC WELDING, MACHINERY MANUFACTURING PLANT/(U)MTU04 3 ULTRASONIC WELDER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/005041/B10 STEP NO--UR/0135/70/000/005/0041/0048

CIRC ACCESSION NO--AP0142720

UNCLASSIFIED

2/2 018 UNCLASSIFIED

CIRC ACCESSION NO--AP0142720 PROCESSING DATE--11DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MACHINE FOR ULTRASONIC WELDING OF METALS CONSISTS OF AN ACOUSTICAL SECTION, USING A MECHANICALLY OSCILLATORY SYSTEM, THE WELDING HEAD, FIXED TO A TABLE, A HORIZONTAL DRIVE SERVO FOR THE ACOUSTICAL SECTION, A CONTACT PRESSURE SERVO, CONTROL EQUIPMENT FOR THE ENERGY FEED SOURCE, AND CONTROL PEDALS. THE ACOUSTICAL SECTION HAS A MAGNETOSTRICTIVE TRANSDUCER, A KNIFE EXPONENTIAL CONCENTRATOR, AND A RESONATING ROD OPERATING IN THE BENDING OSCILLATION MODE. A PHOTOGRAPH OF THE MACHINE IS GIVEN TOGETHER WITH FURTHER DETAILS OF ITS CONSTRUCTION, AND A CROSS SECTIONAL DIAGRAM OF THE ACOUSTICAL SECTION IS PRESENTED. OPERATION OF THE MACHINE UNDER PLANT CONDITIONS HAS SHOWN TAHT IT IS SIMPLE AND RELIABLE IN OPERATION. EXPERIMENTS WERE CONDUCTED ON THE MECHANICAL STABILITY OF WELDS MADE BY THE MACHINE IN THE COURSE OF FILM TRANSFORMER AND ELECTRICAL CAPACITOR MANUFACTURE; THE RESULTS OF THOSE EXPERIMENTS ARE GIVEN IN TABULAR FORM. ASSEMBLY LINE MANUFACTURE OF THE MTU 0.4-3 MACHINE HAS BEEN ORGANIZED IN THE "ELEKTROSVARKA" PLANT IN KALININGRAD. PATENTS HAVE BEEN OBTAINED FOR THE MACHINE IN GREAT BRITAIN AND THE UNITED STATES.

FACILITY: VNIIESO.

UNCLASSIFIED

USSR

UDC 681.325.63

SMIRNOV, A. S.

"An Error-Correcting Decoding Device"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 9, 1970, p 128, Patent No 264774, filed 23 Apr 68

Abstract: This Author's Certificate introduces a decoder with correction of errors from individual to t errors inclusive. The unit contains a receiving and recording unit, as well as information and checking registers. As a distinguishing feature of the patent, the structure of the decoder is simplified by incorporating into it a circuit for detecting errors to be corrected in the information and monitor digits. This circuit contains a binary counter with input connected to the output channels of the checking register. The decoder also incorporates a logic circuit for detection of multiple errors. The inputs of this circuit are connected to the binary counter, and the outputs are connected to the inputs of the rectifiers of the checking register. Also connected to the checking register are logic circuits with outputs connected to the information register. The circuit for receiving and recording the

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USSR

SMIRNOV, A. S. Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 9, 1970, p 128, Patent No 264774, filed 23 Apr 68

the series binary code contains tag isolation circuits, a distributer, and coincidence circuits; and the outputs of this reception and recording circuit are connected to the corresponding inputs of the information and checking registers.

USSR

UDC 681.327.8-19

SMIRNOV, A. S. (Leningrad)

"Information Reliability of Electronic Single-Cycle Circuits"

Avtomatika i telemekhanika, No 8, August 1972, pp 152-160

Abstract: The reliability of electronic single-cycle circuits is viewed as the reliability of data transmission through a channel containing an electronic circuit. A single-cycle circuit is defined as a circuit which has n inputs and one output and which consists of k elements. In order to estimate the information reliability, the probability of current functioning is used, during the calculation of which the probability of receipt of numbers (information) at the input of the circuit and the probability of the state of the circuit are taken into account. A procedure for calculating such probability is proposed and its lower boundary value is determined. 3 fig. 5 ref. Received by editors 15 November 1971.

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USSR

UDC 533.95:538.4

KUKSA, Yu. G., SMIRNOV, A. S., KHMARA, I. S., and CHERNYY, Z. D.

"Action of Electrodynamic Three-Dimensional Forces Under Pulse Excitation

V sb. 7-ye Sovesch. po magnit. gidrodinamike, T. 3 (Seventh Conference on Magnetohydrodynamics. Vol 3 -- Collection of Works), Riga, "Zinatne," 1972, pp 61-64 (from RZh-Fizika, No 11, Nov 72, Abstract No 11G16)

Translation: Several magnetoacoustic quantities are evaluated theoretically, particularly forces excited in the action of a pulsed field on liquid metal in a crucible placed in an inductor. The action of magnetic field pulses on zinc and aluminum in a ceramic crucible after the cooling curve enters the horizontal segment was analyzed in accordance with the theoretical data. The pulse duration of the action was 10 μsec and the pulse repetition frequency varied in the range 0.16-2 Hz. It was found from an analysis of the data that pulse electrodynamic action is assisted by reduction of the grain; however, the degree of reduction depended on the frequency, and the optimum was within the limits 0.16-1 Hz. A uniform distribution of porosity over the entire volume of the metal was observed in all modes. Also tested were resonance conditions for pulsed action on the crystallization of steel castings. In this case resonance and reduction in grain size was observed at a pulse repetition frequency of 25 Hz. V. L.

1/1

USSR

UDC 541.64:543.872

DAVANKOV, A. B. (deceased), LEYKIN, Yu. A., SMIRNOV, A. V., SLOZHENIKINA, T. Ya., and KORSHAK, V. V., Moscow Chemical Technological Institute imeni D. I. Mendeleyev

"Investigation of the Thermooxidative Destruction Processes of Some Phosphorus Containing Ion Exchange Resins"

Moscow, Vysokomolekulyarnyye Soyedineniya, Vol 15, No 11, Nov 73, pp 2446-2452

Abstract: Some phosphorus-containing cationic and amphoteric ion exchange resins were studied by means of thermal analysis. The mechanism of decomposition of phosphorus containing ionogenic groups has been investigated by a combination of thermal analysis, IR-spectroscopy, potentiometric titration, paper chromatography and elemental analysis data of the dry residue of the pyralytic products. It was established that the amphoteric ion exchange resin decomposes by a mixed mechanism including reactions of free phosphonic and phosphonous acid groups in the intralayer form.

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1/2 032 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--HIGH CHROMIUM DIFFUSION COATING ON CHROMIUM NICKEL AUSTENITIC STEELS -U-

AUTHOR-(03)-SMIRNOV, A.V., CHEMRUKOVA, E.N., NACHINKOV, A.O.

COUNTRY OF INFO--USSR

SOURCE--FIZIKO-KHIMICHESKAIA MEKHANIKA MATERIALOV, VOL. 6, NO. 2, 1970, P. 14-18

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--CHROMIUM NICKEL STEEL, ALLOY DESIGNATION, METAL DIFFUSION, METAL COATING, CHROMIZING, METAL POWDER, STAINLESS STEEL, AUSTENITIC STEEL, ALUMINA, IRON ALLOY/(U)E1612 STAINLESS STEEL, (U)1KH18N9 STAINLESS STEEL, (U)1KH18N9T STAINLESS STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1574 STEP NO--UR/0369/70/006/002/0014/0018

CIRC ACCESSION NO--AP0125200

UNCLASSIFIED

2/2 032 UNCLASSIFIED

CIRC ACCESSION NO--AP0125200 PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE FORMATION OF A HARD COATING DURING CONTACT CHROMIZING OF AUSTENITIC STEELS IKH18N9, IKH18N9T, AND E1-612 IN A MIXTURE OF POWDERS CONSISTING OF 40PERCENT CR, 30PERCENT FECR, 28PERCENT ALUMINA, AND 2PERCENT NH4I. IT IS SHOWN THAT THE TOTAL DEPTH OF DIFFUSION OF CR INTO THE IKH18N9 STEEL IS TWICE THAT OF THE E1-612 STEEL. IT IS FOUND THAT THE COATING CONSISTS OF AN OVERGROWN AND A PROPER DIFFUSION LAYER. THE STRUCTURE AND CHEMICAL COMPOSITION OF THE COATING ARE EXAMINED. FACILITY:

LENINGRADSKII INSTITUT AVIATSIONNOGO PRIBOROSTROENIIA, LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC 577.3+612.816

SMIRNOV, A. V., BURLAKOVA, Ye. V., KOL'S, O. R., SVERDLOVA, Ye. A., and FEDOROV, G. Ye., Moscow State University

"Changes in Nerve Fiber Mitochondria of the Crab During Conduction Blocked by Different Agents"

Moscow, Doklady Akademii Nauk SSSR, No 1, 1972, pp 214-125

Abstract: Isolated nerve from an extremity of the green crab Carcinus maenas was stimulated after the conduction of excitation was blocked by (a) a constant current (2 to 3 v), (b) elevation of temperature to 37 to 40°C, (c) 10^{-3} M dinitrophenol solution. Examination of mitochondria from the control (resting) nerve showed them to be elongated with distinct external and internal membranes. The cristae were close together. The same picture was observed after 5 minutes of electrical stimulation of the nerve except that the cristae were somewhat farther apart. However, stimulation of the nerve after conduction was blocked by high temperature or by treatment with dinitrophenol caused the mitochondria to swell and become rounded. The cristae shortened considerably and in places became fragmented. In some cases the changes were so pronounced that the mitochondria resembled vacuoles.

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USSR

UDC 620.10

YEFREMOV, A. K., Candidate of Technical Sciences, Docent, and SMIRNOV, A. V., Graduate Student

"Experimental Investigation of the Influence of Wave Processes During a Longitudinal Elastoplastic Impact"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Mashinostroyeniye, No 7, 1972, pp 19-24

Abstract: A description is given of the laboratory installation and the test procedures; the parameters of the tested wave models, namely long steel rods, are presented. On the basis of an analysis of more than 100 oscillograms of impact processes, the conclusion is drawn that the calculated and experimental values of the proposed criterion for evaluating the degree of influence of wave processes are in sufficiently good agreement. On the basis of theoretical and experimental data, an engineering procedure is developed for the calculation of impact processes in elastic bodies with account taken of wave phenomena. 3 figures. 2 tables. 2 references.

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USSR

UDC 541.64:678.745

SMIRNOV, A. V., LEYKIN, YU. A., DAVANKOV, A. B., KORSHAK, V. V., Moscow Institute of Chemical Technology imeni D. I. Mendeleev, Moscow, Ministry of Higher and Secondary Specialized Education RSFSR

"Study of Acid-Base Equilibrium and Complex Formation on Polyampholites with Pyridine and Phosphonic Acid Groups"

Moscow, Vysokomolekulyarnyye Soyedineniya 12, No 7, 1970, pp 1480-1489

Abstract: Polyampholites (PA) of the APF-type (i.e. based on copolymers of styrene with pyridines) possess icgenic groups of opposing polarity and interesting physicochemical properties, such as formation of inner salts, high thermal stability, and a specific mechanism for the sorption of heavy metals. The sorption mechanism of uranyl nitrate and the acid-base equilibrium were studied. Formation of inner salts in PA was shown by IR spectra and thermal analysis. It was found that the sorption involves complex formation of the phosphonic acid groups with the heavy metals. It is proposed that the sorption mechanism for uranyl nitrate from strongly acidic media involves the formation of a four-membered

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USSR

SMIRNOV, A. V., et al, Vysokomolekulyarnyye Soyedineniya 12, No 7, 1970, pp 1480-1489

ring, including two oxygen atoms and the phosphorus atom of the phosphonic acid group plus the uranium atom of a uranyl group. The structure of this complex was confirmed by IR spectroscopy, liquid chromatography, and thermal analysis.

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USSR

UDC 577.391

SMIRNOV, A. V., and PETROVICH, I.K., Institute of Biophysics, Ministry of Health USSR, Moscow

"The Effect of External General Beta-Irradiation on the Composition of the Peripheral Blood of Rats"

Moscow, Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 607-610

Abstract: Changes in the morphological composition of the peripheral blood after general irradiation of rats with beta-rays from a Sr-90Y source in the dose range of 800-4500 rad were studied. The changes observed varied in extent with the dose of radiation applied and were different for male and female rats. During the first 5 days after irradiation, females exhibited leukopenia caused by a decrease in the number of neutrophils and lymphocytes, whare as in males, on application of doses of 1600-4500 rad, there was an increase in the number of leukocytes due to an increase in both lymphocytes and neutrophils. After the 5th day, the changes in the leukocyte composition were of a polymorphous type for females; the number of lymphocytes decreased, while that of neutrophils increased. In the blood or irradiated males the number of both lymphocytes and neutrophils increased from the 5th to 7-14th

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USSR

SMIRNOV, A. V., and PETROVICH, I. K., Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 607-610

day. A tendency toward normalization of the quantitative composition of white blood elements was observed only toward the 28th day. At that time, the number of lymphocytes reached normal values, while the acute neutrophilosis which developed in both females and males was still observed. The high leukocytosis could be explained by inflammation of the skin and infection. There were no significant changes in the erythrocyte count as a result of irradiation.

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USSR

UDC 616.988.25-022.395.42-084.4(470.51)

KUCHERUK, V. V., KORENBERG, YE. I., PANFILOVA, S. S., SHULEPOVA, T. G., SMIRNOV, A. V., and LEBEDEV, I. P., Laboratory of Medical Zoology, Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Sciences USSR, Moscow, and Republic Sanitary Epidemiological Station, Udmurt ASSR, Izhevsk

"Recent Results in the Control of Tickborne Encephalitis in the Udmurt ASSR"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 40, No 3, May/Jun 71, pp 275-283

Abstract: The annual incidence of tickborne encephalitis is high in the Udmurt ASSR. In some years, it was 18% of all recorded diseases. Data on the disease as it occurred from 1956 to 1965 were studied. The results of these studies led to a sharp reduction in incidence of the disease in the Udmurt ASSR. Statistical data on the disease level are presented in bar graphs for various regions over the 10-year period. Various forests in the area were characterized by their degree of epidemic danger, based on preliminary mapping of the occurrence and recurrence of infections. Subsequently, tick-extermination areas (amounting to 7% of the entire forest lands) were set aside and ticks eliminated by aerial spraying. Gamma-globulin prophylaxis and vaccination are recommended for the population living in areas in which tick eradication is difficult to achieve or impractical.

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SMIRNOV, A.V.

31 Jan 72

112

FPD: CYBERNETICS

Cybernetics

98. USSR

SMIRNOV, A. V., YASTREBOV, V. S.

UDC: 621.83

"Modeling Kinetic Functions of the Human Hand"

Moscow, Mekhanika Mashin, No 27-28, 1971, pp 161-165

Abstract: The reason for this study of the motions of the human hand is that it can form the basis for perfection of manipulators. The authors investigate the principles of hand movements and show how the laws of their control can be modeled. A mechanism using two motors can be used as the analogy of the synergetic and antagonistic muscles, and the proper mode of operation can be attained by controlling the applied voltage. The authors discuss research conducted over several years at the Institute of Oceanology imeni P. P. Shirshov, USSR Academy of Sciences, on the application and perfection of electrohydraulic systems of control of underwater manipulators operating in a broad pulse modulating mode. The circuit diagram of a source of periodic square pulses for converting a continuous input signal into a series of time-modulated pulses for such systems is shown and its operation discussed. The authors conclude that these manipulators can be improved by studying the human hand and by modeling its operation.

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99. USSR

IVANOVITSKIY, V. I., DOVGYALLO, A. M.

UDC 001.007

"The Classification of Tasks Performed by a 'Man-Computer' System

Naukovedeniye, Prognozir. i Informatika. Vyp. 2 [Scientology, Prediction and Informatics, No 2], Kiev, 1970, pp 58-66 (Translated from Referativnyy Zhurnal, Informatika, No 6, 1971, Abstract No 71.6.36)

Translation: The classification of tasks suggested is based on their cybernetic understanding. Problem and non-problem tasks are differentiated. Four main types of tasks are differentiated by combinations of the representations introduced: 1) algorithm performance tasks; 2) programming tasks; 3) tasks of search for an algorithm for solution based on a library of standard programs and machines; 4) tasks of synthesis of a solution algorithm. The first two tasks are non-problem tasks, while tasks three and four are problem tasks. Any poorly defined task is a problem task. A well defined task may be a problem or a non-problem task. Tasks performed using digital computers are subdivided into nondialogue and dialogue tasks. Tasks are divided according to their quantitative characteristics. Computational and data processing tasks are defined. The value of a task changes depending on the speed of the computer, its set of instructions, etc. The basic principles of classification of tasks according to their value are presented. Only large and medium-size tasks are performed with the participation of man.

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USSR

UDC 621.373:535

VOYTOVICh, A. P. and SMIRNOV, A. Ya.

"The Generation of Two Frequencies in a Gas Laser with Nonlinear Selective Losses"

Leningrad, Optika i Spektroskopiya, Vol 34, No 5, May 73, pp 925-930

Abstract: An experiment was conducted to produce dual frequency oscillation in a helium-neon laser (λ = 0.63 micrometers) with a neon absorbing cell within the laser resonator. The experimental apparatus made it possible to displace the natural frequencies of the resonator continuously or to place them in a known position with respect to the contour of the absorption line.

It is well known that the product of the self-absorption values will be greater than the cross absorption product only if the two frequencies of the resonator are nearly symmetrical with respect to the central frequency of the absorption contour. This is true if the frequency difference is greater than the uniform width of the absorption line contour. It would be interesting to know if dual frequency oscillation can be obtained only over a narrow range of frequency differences when the light field is not weak.

A conclusion from this and other studies is that the competition of frequencies in a gas laser can lead to resonance phenomena in the characteristics

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USSR

VOYTOVICh, A. P. and SMIRNOV, A. Ya., Optika i Spektroskopiya, Vol 34, No 5, May 73, pp 925-930

of the oscillations, and that the frequency range over which these phenomena occur is considerably less than the width of the absorption line contour of a low pressure gas. There are hysteresis phenomena in the transition from single to dual frequency oscillation and back. The second oscillation (and therefore the peak signal) disappears at a higher value of absorption than that at which it appears, while the peak signal amplitude is greater at its appearance than at its disappearance. This characteristic should be useful in stabilizing the two frequencies of oscillation.

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USSR

UDC 621.397.621

BEL'SKIY, V. N., DAVIDENKO, S. N., MARKOVA, Yu. V., PILATOVSKIY, A. I., SMIRNOV, A. Ye., and UAKIN, Ye. S.

"Mobile Magnetic Video Recording Station PVS-1"

Moscow, Tekhnika kino i televideniya, No. 6, 1971, pp 33-37

Abstract: The advantage of this mobile video recording station is that it enables personnel involved in TV programming not only to escape the confines of the studio but to transcend the line-of-sight limitations of the portable transmitter. The station was built by order of the State Committee of the Council of Ministers, USSR, for Television and Radio, in the VNIITR /expansion unknown/ and was completed in 1970. Short descriptions are given of the equipment complement, the functional system of the station, the video channel, the sound accompaniment, the recording of directors' comments, and other facilities the station affords. Diagrams are given of the equipment layout in this mobile recording studio, and of interconnections of the system blocks. Photographs of some of the equipment are also shown.

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USSR

UDC: 621.791.793

SMIRNOV, B. A., MALYSHEV, B. D., IVOCHKIN, I. I., Candidates of Technical Sciences, ROSHUPKIN, N. P., SOSEDOV, A. F., Engineers, VNIImontazhspetsstroy, and YEFIMENKO, L. A., Engineer, Moscow Institute of the Petrochemical and Gas Industry imeni Academician I. M. Gubkin

"Particulars Associated With the Structure and Mechanical Properties of Joints Made by Electro-Slag Welding Using Powdered Filler Metal"

Kiev, Avtomaticheskaya Svarka, No 9, Sep 73, pp 46-50

Abstract: It is shown that the use of powdered filler metal reduces significantly the amount of thermal energy expended on joint formation and sharply changes the thermal and technological characteristics of the electro-slag welding process. The operating energy is reduced by 1.7 times. The time of the weld zone metal at above Ac_3 temperatures is reduced by a factor of two and the volume of the metal bath and its duration time in a molten state is also reduced by a factor greater than two. Varying the thermal conditions and the nature of crystallization implies improvement of the primary and secondary structure of the seam metal and weld zone. This raises the impact strength of the metal at low temperatures by a factor of two. In welding heat hardened steel, the extent of the weakening zone is significantly reduced.

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USSR

UDC 51:155.001.57:612.82

SMIRNOV, B. A.

"Use of Method of Statistical Modeling to Study the Activity of a Human Operator"

Probl. Bioniki. Resp. Mezhved. Nauchno-tekhn. Sb. [Problems of Bionics, Republic Interdepartmental Scientific and Technical Collection], No 4, 1970, pp 85-91, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V659 by the author).

Translation: Problems are studied of investigation of reliability and stress of the activity of a human operator in a complex system. The activity of the operator is described by formulas. The description considers the basic psychophysiological regularities of operator activity. An example of the utilization of the results of modeling in planning man-machine systems is studied.

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USSR

UDC 621.791.793.052.01:669.017.3:669.14.013.298.3

KHAKIMOV, A. N., Candidate of Technical Sciences, YEFIMENKO, L. A., Engineer, and PRYGAYEV, A. K., Engineer, Moscow Institute of the National Economy imeni G. V. Plekhanov and GP (abbreviation unknown) imeni I. M. Gubkina; SKIRNOV, B. A., Candidate of Technical Sciences, SOSEDOV, A. F., Engineer, and ROSHCHUPKIN, N. P., Engineer, All-Union Scientific Research Institute Montazhspetsstroy

"Regulation of the Structure and Properties of Welded Joints of 10G2FR Heat-Treated Steel in Electroslag Welding"

Moscow, Svarochnoye Proizvodstvo, No 1(471), Jan 74, pp 24-26

Abstract: A study was made of the conditions for the regulation of the structure and properties of electroslag-welded joints of 10G2FR heat-treated low-alloy sheet steel, 40 mm thick, with a view to increase the structural-mechanical homogeneity of welded joints. The introduction of a powerlike additive metal into the slag bath favors a reduction of the stay period over the temperature of the critical point Ac_3 of the near-seam metal at heating from 45-50 to 10-12 sec., an increase of the heating rate from 8-10 to 35-40°C/sec, and nearly two-fold increase of the welding rate. The application of

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USSR

(3)

KHAKIMOV, A. N., et al., Svarochnoye Proizvodstvo, No 1(471), Jan 74, pp 24-26

accompanying cooling makes it possible to decrease the stay period over the Ac_3 temperature of the near-seam metal on cooling from 140-170 to 80-95 sec and to increase the cooling rate from 0.7-1 to 13.5-14° C/sec. At 12.5-14° C/sec cooling rate, the impact ductility of the seam and the near-seam zone of welded joints of 10G2FR heat-treated steel increases up to a level exceeding the norm values within the temperature interval of 20 to -60° C, and a loss of strength is practically prevented. Six figures, three tables, two bibliographic references.

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USSR

UDC 669-172:541.12.03

SMIRNOVA, N. B., SMIRNOV, B. G., MIKHAYLOV, S. M., SHUPPE, G. N., and GRISHKOV, G. N.

"Thermoelectronic Emission of Faces of a Single Crystal of MR-27 Alloy"

Monokristally Tugoplavkikh i Redkikh Metallov [Single Crystals of Refractory and Rare Metals -- Collection of Works], Nauka Press, 1971, pp 78-81

Translation: The thermoelectronic parameters of the (110), (100), and (111) faces of a single crystal of MR-27 alloy (Mo + 27% Re) are measured at various stages of heat treatment; values are produced for work function ϕ and Richardson constant A_{eff}. 1 Table; 4 Figures; 5 Bibliographic References.

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1/2 025 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--THERMOEMISSION PROPERTIES OF 100 FACES OF SINGLE CRYSTALS OF IRIDIUM, OSMIUM, AND RHENIUM SOLID SOLUTIONS IN TUNGSTEN -U-

AUTHOR-(04)-SMIRNOVA, N.B., SMIRNOV, B.G., MIKHAYLOV, S.M., SHUPPE, G.N.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(4), 1277-9

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--METAL SINGLE CRYSTAL, IRIDIUM ALLOY, OSMIUM ALLOY, RHENIUM ALLOY, TUNGSTEN ALLOY, SOLID SOLUTION, WORK FUNCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0486 STEP NO--UR/0181/70/012/004/1277/1279

CIRC ACCESSION NO--AP0126238

UNCLASSIFIED

2/2 025 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126238

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THERMAL EMISSION FROM THE (100) FACES OF SINGLE CRYSTAL SOLID SOLNS. IN W OF THE FOLLOWING METALS WAS STUDIED: RE (1 ATOM PERCENT), OS AND IR (2 ATOM PERCENT). HEATING OF W-IR2 CRYSTAL AT HIGH TEMPS. (2050-2000EGREESK), OR 20-30 HR LEADS TO THE APPEARANCE OF THE RICHARDSON CURVES OF 2 SECTIONS THAT ARE SHARPLY DIFFERENT IN SLOPE. AT 1800-2030DEGREESK, PHI SUBR EQUALS 4.54 EV, A SUB4 EQUALS 6 A-CM PRIME2 DEGREE PRIME2, AND AT 2030-2000EGREESK PHI SUB4 EQUALS 5.28 EV, A SUB4 EQUALS 250 A-CM PRIME2 DEG PRIME2. THE LOW TEMP. PHI SUBR IS PROBABLY THAT OF THE SECTIONS OF W SURFACE OCCUPIED BY W ATOM. IF THE CRYSTAL IS HEATED AT 1900DEGREESK FOR 15 HR THE RICHARDSON CURVE CHANGES INTO A STRAIGHT LINE WITH PHI SUB4 EQUALS 5.30 EV AND A SUBR EQUALS 420 A-CM PRIME2 DEGREE PRIME2. TEMP. DEPENDENCE OF THE WORK FUNCTION FOR W-OSL ALLOY AT 1700-2380DEGREESK INDICATES 2 SECTIONS: FOR 1700-2030DEGREESK PHI SUBR EQUALS 4.57 EV, A SUBR EQUALS 10 A-CM PRIME2 DEGREE PRIME2, FOR 2080-3000EGREESK, PHI SUBR EQUALS 5.12 EV, A SUBR EQUALS 190 A-CM PRIME2 DEGREE PRIME2. THE VALUE OF 4.57 EV CHARACTERIZES THE SECTIONS OF (100) FACE PACKED WITH W ATOMS.

FACILITY: TASHKENT. GOS. UNIV. IM. LENINA, TASHKENT, USSR.

UNCLASSIFIED

USSR

BEKBAULIYEV, B., SMIRNOV, B.G.

UDC 621.385.7:537.53

"Autoelectronic Emission From Single Crystals Of Niobium And Adsorption Of Zirconium At A Niobium Point"

Nauch. tr. Tashkent. un-t (Scientific Works Of Tashkent University), 1971, Issue 393, pp 223-229 (from RZh:Elektronika i yeye primeneniye, No 10, October 1972, Abstract No 10A8)

Translation: In a spherical electron project, patterns of electron emission from uncontaminated and contaminated points were qualitatively observed. The points studied were made of niobium wire 90 micron in diameter ("raw" or annealed beforehand in a high vacuum) with chemical etching. After production, the point was washed in distilled water and the support [nozhka] was welded to the flask [kolb] of the projector. The devices were evacuated continuously for 48 hours and were sealed off in a complex with a ring-shaped titanium getter and a Bayard-Al'pert type manometer. The vacuum in the sealed-off projector was better than 10^{-9} mm of mercury. The source of zirconium was a tantalum cup with grains of zirconium deposited on the bottom; the cup was heated by electron bombardment. As the migration of zirconium atoms to the surface of a niobium microcrystal proceeds, bright regions corresponding to the (116) directions are changed into weakly emitting; and the very bright regions around the (111) directions now occupy a large area and become still brighter. Such a distribution of emission

USSR

ZHITARU, R. P., KLYAVIN, O. V., SMIRNOV, B. I.

"Effect of Gamma Irradiation on the Mechanical Characteristics and Dislocation Structure of LiF Crystals Deformed at 4.2-300°K. Part II. Dislocation Structure"

Kishinev, Izvestiya Akademii Nauk Moldavskoy SSR, Seriya Fiziko-Tekhnicheskikh i Matematicheskikh Nauk, No 3, 1972, pp 15-21

Abstract: Dislocation structures are studied in deformed and gamma-irradiated lithium fluoride crystals at 4.2-300°K. The crystals were selectively etched in a weak solution of ferric chloride. Initial dislocation density was approximately 10^4 per sq. cm. The results showed that the displacement of the slip bands increases linearly with yield stress in irradiated crystals. The rate of increase in displacement is the same at 78 and 4.2°K and increases considerably at 300°K. The density N of dislocation pits in the slip bands also increases, $\sqrt{N}$ being a linear function of yield stress. As the deformation temperature is reduced, the slope of the lines for $\sqrt{N}$ decreases for both screw dislocations and edge dislocations, except that the relation for screw dislocations shows no difference at 4.2 and 78°K. The free run of

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002203110003-9"

USSR

ZHITARU, R. P. et al., Izv. AN MoldSSR, Ser. Fiz.-Tekhn. i Mat. Nauk, No 3, 1972, pp 15-21

screw dislocations decreases with an increase in radiation dose and with a reduction in temperature. The reciprocal of the free run is a linear function of yield stress. The slopes of the lines for the latter relation are constant for all temperatures. Irradiating the crystals increases the probability of primary and secondary transverse slip at all temperatures. The change in parameters of the dislocation structure of slip bands is apparently due to an increase in the number of "stoppers", which oppose the motion of the dislocations themselves, and change the parameters of transverse slip of the dislocations. Coagulation of defects with larger doses of radiation is the most probable cause of the reduction in rates of change of these parameters with increased dose. Qualitatively, the irradiation of lithium fluoride crystals influences the parameters of the dislocation structure in the same way as does doping the crystal with magnesium. The authors thank T. V. Samoylova for consultation, and P. O. Barabtarlo for assisting with the electron microscope measurements of dislocation density.

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1/2 026 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--DENSITY OF MOVING DISLOCATIONS DURING CRYSTAL DEFORMATION -U-

AUTHOR--SMIRNOV, B.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(3), 927-9

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CRYSTAL CATTICE DISLOCATION, CRYSTAL DEFORMATION, LITHIUM FLUORIDE, ETCHED CRYSTAL, SLIP FLOW

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/1977

STEP NO--UR/0181/70/012/003/0927/0929

CIRC ACCESSION NO--AP0105051

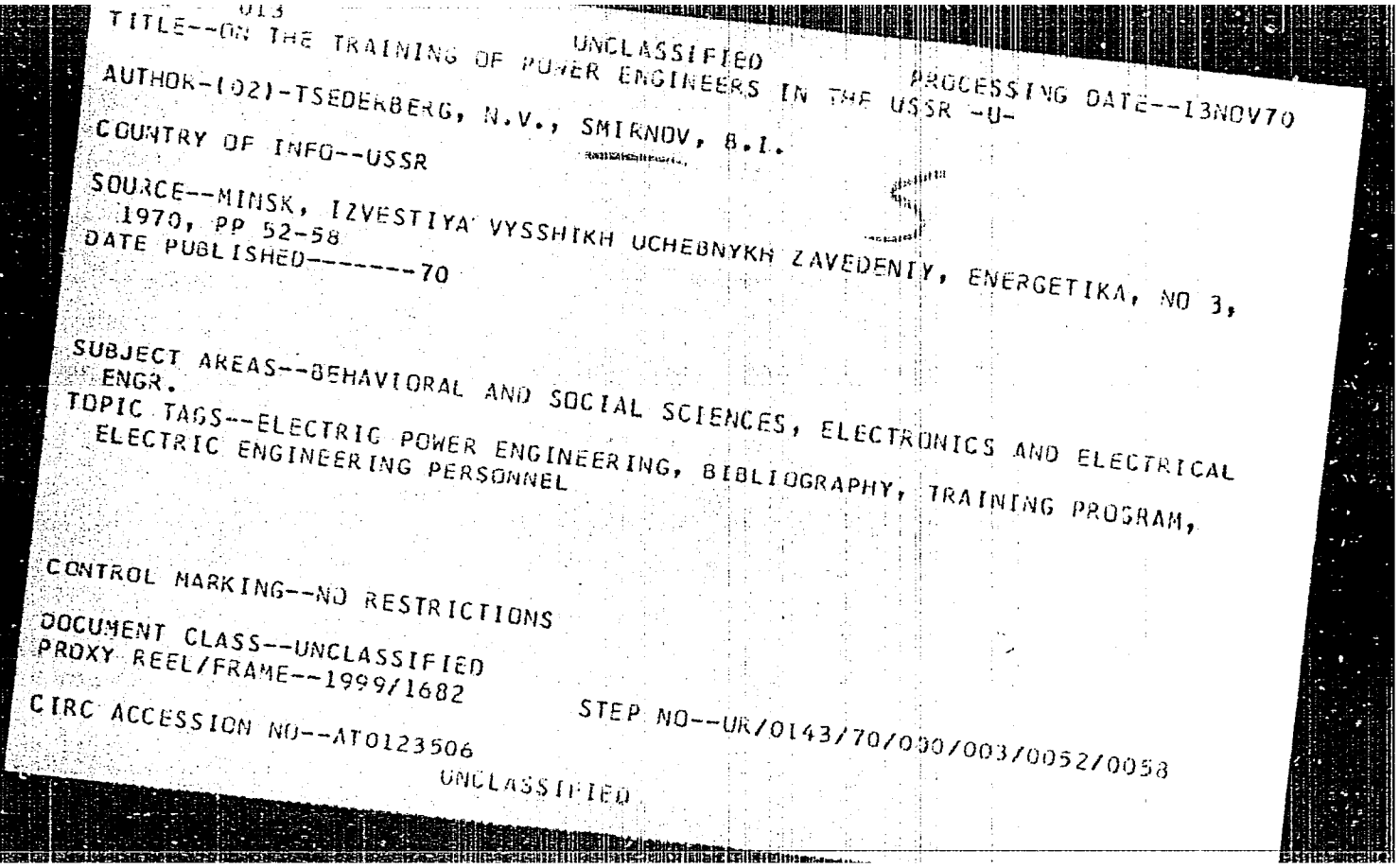
UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105051

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EVALUATION WAS MADE OF THE D. OF MOVING DISLOCATIONS DURING THE DEFORMATION OF LIF CRYSTALS. LIF SPECIMENS WITH DIMENSIONS OF 4 TIMES 4 TIMES 16 MM WERE COMPRESSED AT A CONST. VELOCITY OF SIMILAR TO 10 PRIME NEGATIVE4 SEC PRIME NEGATIVE1 TO A DEFORMATION OF THE ORDER OF 3-5PERCENT. IN THIS SPECIMEN, THE SURFACE WAS COMPLETELY FILLED WITH SLIP BANDS, BUT AT THE SAME TIME THE GENERAL DEFORMATION WAS NOT QUITE LARGE SO THAT THE INTERACTION OF VARIOUS SYSTEMS OF SLIP COULD PLAY AN ESSENTIAL ROLE. AFTER DEFORMATION, THE LOAD WAS REMOVED AND SPECIMENS WERE ETCHED TO DEVELOP THE DISLOCATION STRUCTURE. AFTERWARDS, THEY WERE AGAIN DEFORMED AT THE SAME VELOCITY AND ETCHED AGAIN. FINALLY, THE SCREW DISLOCATIONS WERE EXAMD. UNDER A MICROSCOPE TO DET. THE NO. OF FLAT BOTTOMED DEPRESSIONS, WHICH INDICATE THE DISPLACEMENT OF DISLOCATIONS ON REPEATED LOADING. THE PRIMARY ETCHING HOLES ON REPEATED LOADING ALL REMAIN FLAT BOTTOMED, AND NEW ETCHING HOLES APPEAR TO BE OF SMALL DIMENSIONS. IN THE SO CALLED "MACHINE EQUATION," WHICH DESCRIBES THE CURVES OF DEFORMATION OF THE CRYSTALS, WHEN THE PLATEAU OF FLOW IS TERMINATED A GENERAL D. OF DISLOCATIONS SHOULD BE SUBSTITUTED. IN A SINGLE SLIP WHEN THE RATE OF PLASTIC DEFORMATION IS A CONST., THE DISLOCATION D. IS PROPORTIONAL TO THE SHIFT OF THE RATE, AND THE RATE OF SLIP OF THE DISLOCATIONS DECREASES AS THE DEFORMATION INCREASES. THE NO. OF MOVING DISLOCATIONS IS INDEPENDENT OF THE STRESS. FACILITY: FIZ. TEKH. INST. IM. IOFFE, LENINGRAD, USSR.

UNCLASSIFIED



013 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--ON THE TRAINING OF POWER ENGINEERS IN THE USSR -U-

AUTHOR-(02)-TSEDERBERG, N.V., SMIRNOV, B.I.

COUNTRY OF INFO--USSR

SOURCE--MINSK, IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY, ENERGETIKA, NO 3, 1970, PP 52-58

DATE PUBLISHED-------70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ELECTRIC POWER ENGINEERING, BIBLIOGRAPHY, TRAINING PROGRAM, ELECTRIC ENGINEERING PERSONNEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1682

STEP NO--UR/0143/70/000/003/0052/0058

CIRC ACCESSION NO--AT0123506

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0123506

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROBLEM OF THE TRAINING OF POWER ENGINEERS BOTH IN PREREVOLUTIONARY RUSSIA AND IN THE USSR IS DISCUSSED. IT IS SHOWN THAT ALONG WITH DEVELOPMENT OF POWER ENGINEERING THE NUMBER OF POWER ENGINEERS INCREASED AND THE QUALITY OF THEIR TRAINING WAS IMPROVED.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--STRESS RELAXATION AND DISLOCATION MOBILITY IN LITHIUM FLUORIDE CRYSTALS DEFORMED AT 300 TO 4.2DEGREESK -U-

AUTHOR--KLYAVIN, O.V., SMIRNOV, B.I., CHERNOV, YU.M.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(1) 286-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--CRYSTAL DISLOCATION, LITHIUM FLUORIDE, STRESS RELAXATION, PLASTIC DEFORMATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0639 STEP NO--UR/0181/70/012/001/0286/0289

CIRC ACCESSION NO--AP0105618

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0105618

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STRESS RELAXATION CURVES WERE STUDIED FOR LOADED LIF CRYSTALS DEFORMTT AT 300 TO 4.2DEGREESK. SPECIMENS WERE DEFORMED IN COMPRESSION AT 300, 78, AND 4.2DEGREESK USING A SPECIAL APP. AND OPTICAL CRYOSTAT WHICH ALLOWS THE PROCESS OF PLASTIC FLOW OF THE CRYSTALS TO BE FOLLOWED BY THE POLARIZATION OPTICAL METHOD DIRECTLY AT LIQ. HE TEMPS. THE OPTICAL ELASTIC LIMIT TAU SUBS, THE YEILD STRESS TAU SUBS, AND THE MAGNITUDE OF STRESS TAU SUBM AT WHICH THE RELAXATION CURVE WERE RECORDED. DEFORMATION TOOK PLACE ALONG (110)(110). IN THE PROCESS OF STRESS RELAXATION IN THE LOADED CRYSTAL, ELASTIC DEFORMATION OF THE SYSTEM (MACHINE PLUS SPECIMEN) EPSILON SUBE DECREASES DUE TO THE PLASTIC DEFORMATION OF THE SPECIMEN EPSILON SUBP; EPSILON SUBP EQUALS MINUSP-ML, WHERE M IS THE HARDNESS OF THE SYSTEM, L IS THE SPECIMEN LENGTH, AND P IS THE LOAD. THE ACTIVATION VOL. WAS CALCD. FROM THE EXPTL. RELATION P(T). THE CURVE OF THE VELOCITY OF THE DISLOCATION MOTION VS. STRESS IN LIF CRYSTALS BECOMES STEEPER WITH DECREASING TEMP. DOWN TO 4.2DEGREESK. THE ACTIVATION VOL., WHICH DETS. THE MOTION OF THE DISLOCATIONS, DECREASES SHARPLY WITH INCREASING DEFORMING STRESS INDICATING A STRONG DEPENDENCE OF THE ACTIVATION ENERGY OF THE PROCESS OF DEFORMATION ON STRESS.

UNCLASSIFIED

USSR

ZIMKIN, I. N., SAMOYLOVA, T. V., SMIRNOV, B. I., Physicotechnical Institute imeni A. F. Ioffe, Acaiemy of Sciences of the USSR, Leningrad

"Effect of a Dislocation Array on the Parameters of the Dislocation Structure of Slip Bands in Lithium Fluoride Crystals"

Leningrad, Fizika Tverdogo Tela, Vol 14, No 6, Jun 72, pp 1831-1833

Abstract: An investigation was made of the effect which an array of dislocations has on the development of slip bands in lithium fluoride crystals; specifically, on the rate of broadning of the bands, the magnitude of the displacement, and the density of the edge and Burgers components of the dislocations, as well as their mean free path. The dislocation structure was studied by selective etching. It was found that a simple relation exists between the slip band parameters and the dislocation density. The edge dislocations in the slip bands increase with yield stress, but there is a reduction in the edge-to-Burgers component ratio.

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USSR

SMIRNOV, B. M.

"Methods in the Theory of Slow Collisions of Atomic Particles"

Moscow, Asimptoticheskiye metody v teorii atomnykh stolknoveniy (Asymptotic Methods in the Theory of Atomic Collisions), Atmoizdat, 1973, Chapter 4, Part 2, pp 124-166

Abstract: This capter begins by noting the general methods for finding the transition probability in slow atomic collisions and analyzing the general characteristics of transition probabilities. A method of simplifying the problem of finding the probability of inelastic transitions in slow atomic collisions if the motion of the nuclei can be described by classical laws is proposed. The author investigates collisions of slow atomic particles in which the velocity of the approaching nuclei is much less than the characteristic electron velocities, and an adiabatic approximation is found. Here, the concept of the quasi-molecule, a system of colliding atomic particles in which the nuclei are immobile, is used. The so-called resonance processes, highly important in practice, are considered, and a simpliciation of the calculations involved is indicated if the atomic particle states are not degenerate. A number of limiting cases of the Nikitin formula are listed and the formula itself discussed. The general characteristics of the resonance processes for

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USSR

SHIRNOV, B. M., Asymptotic Methods in the Theory of Atomic Collisions, Atomizdat, 1973, Chapter 4, Part 2, pp 124-166

the transition between degenerate states are investigated. Also considered is the broadening of the spectral line for atomic radiation in gases, in which interest centers on the shape of the spectral line, its width and shift, and when the line is determined by the collision of the radiating atom with its surrounding gas atom particles.

2/2

USSR

UDC 661.666-494.001.5

FIALKOV, A. S., SIDOROV, N. M., SMIRNOV, B. N., and DYUZHIKOV, B. I.

"Specific Features of the Structure and Growth of Threadlike Pyrocarbon Formations"

Moscow, Doklady Akademii Nauk SSSR, Vol 211, No 1, Jul-Aug 73, pp 158-160

Abstract: The initial period of the growth of thread-like pyrocarbon formations -- the so-called "whiskers" -- has been investigated. The "whiskers" were obtained at a temperature 900-1000° in 10-40 mm Hg vacuum from benzene vapors without any gas diluent, over graphite supports, using metallic catalyst. It has been shown that the actual carbon whisker consists of a central core shooting out of the surface of the activated support in form of a band 100-200 A thick, rolled into a cylindrical spiral. The formation process of these whiskers goes through several stages: activation of the support, radical-chain type reaction occurring during the cracking of the hydrocarbon followed by chain polymerization of the products. The thickening of the cores is due to the deposition of sooty and pyrocarbon films on its surface.

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USSR

UDC 669.15.018.8:620.194.2:621.785.78

NAZAROV, A. A., SMIRNOV, B. N., FILIMONOV, G. N.

"Phase Composition of Kh18N10T Steel and Its Corrosion Resistance"

Metallovedeniye -- V sb. (Physical Metallurgy -- collection of works), No 14, Leningrad, Sudostroyeniye Press, 1970, pp 90-93 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G618)

Translation: The effect of aging at 340-750° for from 5 to 10,000 hours on the corrosion resistance of Kh18N10T steel in environments with a high chloride content is investigated. It was established that the variation in phase composition during aging has no effect on the tendency of the steel toward stress corrosion cracking. The defining factors in stress corrosion cracking are the tensile stresses and the environment. There are 4 illustrations and 1 table.

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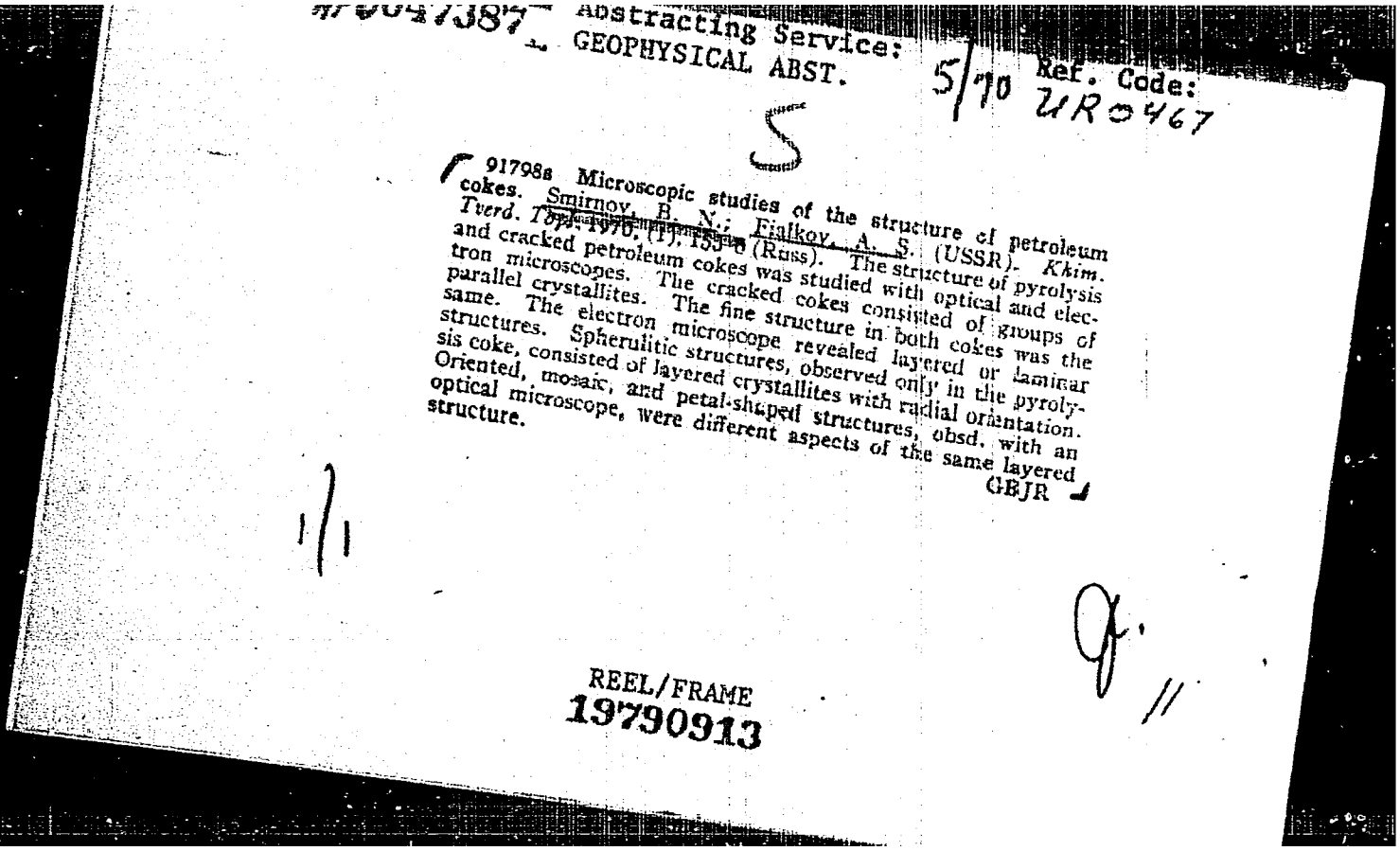

Abstracting Service:
GEOPHYSICAL ABST.

5/70 Ref. Code:
UR0467

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91798s Microscopic studies of the structure of petroleum cokes. Smirnov, B. N.; Fialkov, A. S. (USSR). *Khim. Tverd. Topl.* 1970, (1), 153-6 (Russ). The structure of pyrolysis and cracked petroleum cokes was studied with optical and electron microscopes. The cracked cokes consisted of groups of parallel crystallites. The fine structure in both cokes was the same. The electron microscope revealed layered or laminar structures. Spherulitic structures, observed only in the pyrolysis coke, consisted of layered crystallites with radial orientation. Oriented, mosaic, and petal-shaped structures, obsd. with an optical microscope, were different aspects of the same layered structure.
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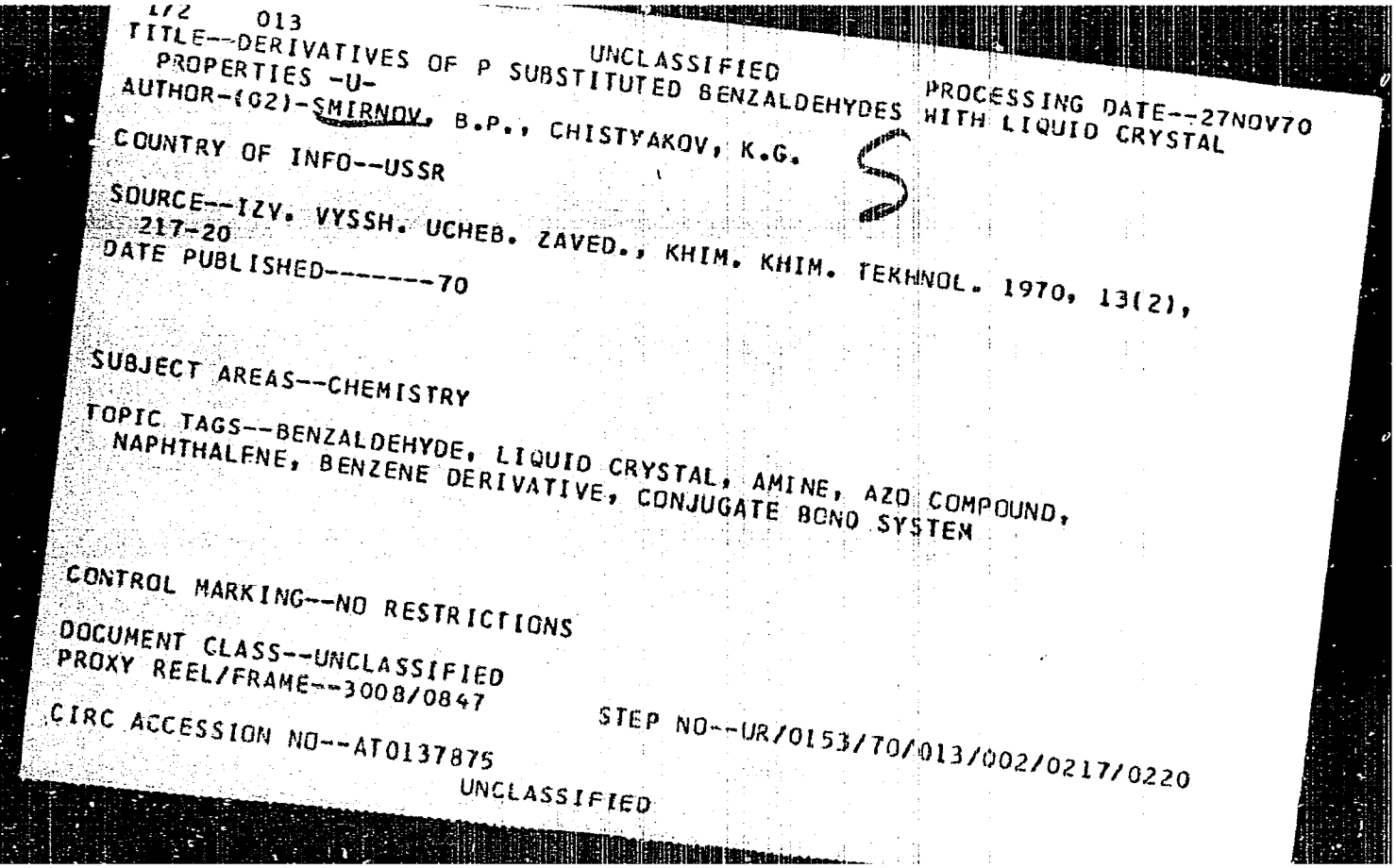

1/2 013 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--DERIVATIVES OF P SUBSTITUTED BENZALDEHYDES WITH LIQUID CRYSTAL PROPERTIES -U-
AUTHOR-(02)-SMIRNOV, B.P., CHISTYAKOV, K.G.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(2), 217-20
DATE PUBLISHED-------70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--BENZALDEHYDE, LIQUID CRYSTAL, AMINE, AZO COMPOUND, NAPHTHALENE, BENZENE DERIVATIVE, CONJUGATE BOND SYSTEM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0847
STEP NO--UR/0153/70/013/002/0217/0220
CIRC ACCESSION NO--AT0137875
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--27NOV70

2/2 013
CIRC ACCESSION NO--AT0137875
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LIQ. CRYSTAL BEHAVOIR IS NOTED FOR THE FOLLOWING COMPOS. (THE GIVEN TEMP. IS THE TRANSITION TEMP. TO THE THREAD LIKE PHASE): CONDENSATION PRODUCT OF P,AMC SUB6 H SUB4 CHO (AM EQUALS AMYL) AND P AMINO,AZOBENZENE, 86DEGREES, 4,PHENYLAZO,1,NAPHTHYLAMINE, 88DEGREES, CONDENSATION PRODUCT OF P AMC SUB6 H SUB4 CHO AND P H SUB2 NC SUB6 H SUB4 CH:CHCO SUB2 ET, 99DEGREES; (; PRC SUB6 H SUB4 CH:N) SUB2, 61DEGREES; (P AMC SUB6 H SUB4 CH:N) SUB2, 68DEGREES; P,(P,ISO,PRC SUB6 H SUB4 CH"N) SUB2 C SUB6 H SUB4, 185DEGREES; P,(P,ISO,BUC SUB6 H SUB4 CH:N) SUB2 C SUB6 H SUB4, 188DEGREES; P,(P,ISO,C SUB5 H SUB11 C SUB6 H SUB4 CH:N) SUB2 C SUB6 H SUB4, 166DEGREES; (P,ETC SUB6 H SUB4CH: N) SUB2 C SUB6 H SUB4, 125DEGREES; 152DEGREES; P,(P,PRC SUB6 H SUB4 CH:N) SUB2 C SUB6 H SUB4, 122DEGREES, AND P,AMC P,(P,AMC SUB6 H SUBE CH:N) SUB2 C SUB6 H SUB4, 128DEGREES. TWELVE RELATED SUB6 H SUB4 CH:N) SUB2 C SUB6 H SUB4, 128DEGREES. TWELVE RELATED COMPDS. EXAMD. DID NOT EXHIBIT LIQ. CRYSTAL BEHAVIOR. LIQ. CRYSTAL BEHAVIOR IS APPARENTLY DETD. BY THE LENGTH OF THE CONJUGATED CHAIN AND TO A GREATER DEGREE BY THE LENGTH AND NATURE OF SUBSTITUENTS. METHODS OF PREPN., YIELDS, AND PROPERTIES ARE GIVEN FOR MOST OF THE COMPDS.
FACILITY: IVANOV. MED. INST., IVANOVO, USSR.

UNCLASSIFIED

UDC: 681.337

USSR

SMIRNOV, B. S., BADU, Ye. I.

"A Device for Automatic Scale Changing in Analog Computers"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 46, Dec 73, Author's Certificate No 407327, Division G, filed 21 Feb 72, published 21 Nov 73, p 163

Translation: This Author's Certificate introduces a device for automatic scale changing in analog computers based on Author's Certificate No 228342. As a distinguishing feature of the patent, operating accuracy is improved by adding a unit for a variable subrange expansion coefficient containing a product unit whose inputs are connected to a source of the first and second derivative of the variable to be scaled. The output of the product unit is connected to the inputs of zone discriminators. Connected to the output of each of the zone discriminators is an actuating element such as a relay whose normally open contacts are connected in the corresponding circuit of the module for setting and resetting initial conditions.

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UDC: 621.317.727.1(088.8)

USSR

BUTS, V. P., SMIRNOV, E. N., TYURIN, I. P.

"A Capacitive Voltage Divider"

USSR Author's Certificate No 260022, filed 24 Jun 68, published 27 Apr 70 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11A286 P)

Translation: The proposed design has the purpose of improving the shielding of a low-potential electrode in a high-voltage vacuum capacitor which is part of a capacitive voltage divider without reducing the electrical strength. For this purpose, the high-potential electrode is made in the form of a cylinder which surrounds the low-potential electrode, and which is flanged toward the shielding cylinder. This cylinder is equipped with a flange directed toward the high-potential electrode, the inner edge of this flange being located inside the solid angle bounded by the lower edge of the low-potential electrode and the outer edge of the flange on the high-potential electrode. E. L.

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UDC 669.14.018.298:620.172

USSR

KAGAN, YE. S., SMIRNOV, B. S., and FRIDMAN, V. S.

"Ductility and Plasticity Increase of OOOKh11N10M2T Steel in Large Cross-Sections"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 12, 1973, pp 13-17

Abstract: The influence of different methods of heat treatment and of hot plastic deformation on the ductility, plasticity, and also on the state of the surface of fractures of OOOKh11N10M2T steel was experimentally determined. Hot-rolled rings, after water-hardening from 1200°C, rolling at 1050°C, hardening from 860°C, and aging at 500-525°C were found to possess tangentially high and axially satisfactory elasticity and ductility. Rings which were not preliminarily hardened from 1200°C differed little in plasticity and ductility from rings subjected to high-temperatura hardening. Heat treatment (600°C for 2 hr or 600°C for 5 hr + 500°C for 2 hr) of hot-rolled rings for the ultimate strength σ =120-130 kg/mm^2 raised ductility and plasticity of hot-rolled rings. The possibility was ascertained to increase the ductility and plasticity of OOOKh11N10M2T steel by heat treatment for σ =135-150 kg/mm^2, including aging at 600°C, hardening from 860°C, and aging at 500°C. Two figures, two tables, four bibliographic references.

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UDC 389.0:531.768

USSR

SMIRNOV, G. A., ANDRUSHCHUK, V. V., KOVCHIN, S. A.

"A Precision Installation for the Reproduction of Constant Acceleration"

Moscow, Izmeritel'naya Tekhnika, No 12, Dec 70, pp 31-32

Abstract: In the article are presented the basic data concerning the design of the PTs-3 precision centrifuge, latest of a series developed by the Leningrad Polytechnical Institute imeni M. I. Kalin'in, in the range of 0.01-160 g with a limit relative error of 0.01%. A description is given of the design features of the mechanical part, the electric-drive system, and the precision mercury current collector used for picking up electrical signals from the tested instruments. 1 figure, 3 bibliographic entries.

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UDC 621.391:519.27

USSR

BULGAKOV, A. A., PICHUGINA, L. V., SERIKOV, V. A., and SMIRNOV, G. A.

"Determining the Current Characteristics of Steady, Ergodic, Random Processes With Respect to Long Duration Realization Using the Razdan-2 Electronic Digital Computer"

Tr. Leningr. in-t aviats. priborostr. (Works of the Leningrad Institute of Aviation and Instrument Building), 1972, vyp. 74, pp 98-102 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 A17)

Translation: The authors study the use of the Razdan-2 electronic digital computer for calculating the current characteristics of steady, ergodic, random signals obtained from a receiver, noise generator or magnetic recording instrument. Further insignificant improvements in the computer make it possible to register signals in real time after their discretization and quantization directly on the magnetic tape of the storage element, thus bypassing the memory unit. This increases the length of the analyzed realization by approximately two orders of magnitude. Recording in a single 4- and 8-digit element raises the higher signal discretization frequency. It is shown that the indicated improvements make it possible to carry out a broad program of statistical studies on realizations, up to one minute in duration, at a discretization frequency of up to 10-15kc and quantization to 256 levels. The accuracy of characteristic determination is evaluated. Original article: one illustration and two bibliographic entries. Resume.

1/1

UDC 575.24

USSR

SKAVRONSKAYA, A. G., and SMIRNOV, G. B., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR, Moscow

"Phenotypic Suppression of Ultraviolet Sensitivity of Escherichia coli B by Streptomycin"

Moscow, Genetika, Vol 6, No 7, Jul 70, pp 111-119

Abstract: Treatment of ultraviolet-irradiated Escherichia coli B cells with sub-bacteriostatic concentrations of streptomycin decreased their sensitivity to UV while increasing that of the B/r-like fraction of the E. coli population. Similar treatment decreased the UV sensitivity of E. coli B/r. The effect of the antibiotic is attributed not to inhibition of protein synthesis, but to phenotypic suppression of the fil+ gene. The high UV sensitivity of E. coli B is assumed to result from an insufficiency of the enzyme polynucleotide ligase.

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UDC 681.332.65

USSR

SMIRNOV, G. D., PYKHTIN, V. Ya., and ZAPOL'SKIY, A. P.

"A Device for Exchange of Information"

USSR Author's Certificate No 288428, filed 24 Jun 67, published 28 Jan 71 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct 71, Abstract No 10B243 P)

Translation: Devices are known for exchange of information between two subscribers which contain memory elements, decoders, and a commutator. These devices typically have a slow speed of exchange and a large memory capacity. As a distinguishing feature of this patent, the proposed device includes input and output counters and a comparison module; one input is connected to the output of the output counter, while the other input is connected to the output of the input counter and to the input of the input decoder. This increases the speed of exchange and cuts down the storage required.

1/1

UDC 681.32:31

USSR

PRZHIYALKOVSKIY, V. V., SMIRNOV, G. D., and PYKHTIN, V. YA.

"The Minsk-32 Electronic Computer"

Elektronnaya vychislitel'naya mashina "Minsk-32" (cf. English above), Moscow, "Statistika," 1972, 160 pp, ill., 56 k. (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 5, May 72, Abstract No 5B74K from annotation)

Translation: The book presents the principal technical parameters, operation algorithms, general structure, and capabilities of the Minsk-32 electronic computer. Its main features are described in detail. Questions of providing compatibility with the Minsk-2 and Minsk-22 computers are also considered. The book is intended for specialists working on computers of this series.

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UDC 681.326

USSR

PRZHIYALKOVSKIY, V. V., SMIRNOV, G. D., PYKHTIN, V. YA., VASILEVSKIY, A. N., ZAPOL'SKIY, A. P., MAL'TSEVA, V. A., IVANOV, G. A., REMOROVA, R. A., MEMENMAN, M. YE., and KUSHNEREV, N. T.

"Processor for Digital Data Processing System"

USSR Authors' Certificate No 305477 Cl. G06 f 15/16, filed 18 Apr 69, published 29 Jul 71 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 5, May 72, Abstract No 5E220P)

Translation: The proposed device can be used in general-purpose computers operating in the binary and decimal number systems, under fixed- and floating-point conditions, and with representation of information in the form of machine levels and alphanumeric symbols, which have the capability of a wide build-up of peripherals. The processor contains arithmetic and logic units broken down into sections, a data store with word addressing and symbolic addressing, a control device to perform operations in accordance with a program routine, built-in multiplex and selector channels to communicate with the set of peripherals operating simultaneously with the arithmetic and logic unit, a symbol isolation unit, a number unit, and a storage address register.

1/1

UDC 621.438 + 621.039.5

USSR

TETEL'BAUM, S.D., SMIRNOV, G.F., KLOK, A.M.

"Possibility Of Creating Economical And Compact Ship Atomic Gas-Turbine Installation With The Use Of New Working Substances"

Sydostr. i mor. soopuzh. Resp. mezhved. temat. nauch.-tekhn. sb. (Shipbuilding And Marine Construction. Republic Interdepartmental Thematic Scientific-Technical Collection), 1972, Issue 18, pp 31-38 (from RZh:Yadernyye reaktory, No 7, July 1972, Abstract No 7.50.23)

Translation: It is shown that with the use of mixtures of certain gases with helium as a working substance it is possible to increase the thermodynamic efficiency of a cycle after the minimum surface of the regenerator has been maintained, the maximum power of the turbine increased, and a number of other indices of a ship single circuit AGTU [atomic gas-turbine installation] improved. An analysis is made with the limitations taken into account which are applied to such devices consistent with a specific nuclear reactor. 3 ill. 14 ref.

1/1

UDC 536,423.1:532.526

USSR

BARANENKO, V. I., and SMIRNOV, G. F. (Nikolayev - Odessa)

"An Optical Method for Investigating the Heat-Exchange Mechanism During Bubble Boiling

Moscow, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 1, 1973, pp 170-176

Abstract: In the article are presented the results of an experimental investigation of the heat-exchange mechanism during the bubble boiling of water with underheating in a free volume. The investigation was conducted by means of a grating-type laser interferometer. By means of processing the interferograms, it becomes possible to obtain local quantitative characteristics of the process, and to determine the scale of the temperature pulsations within the zone of action of the steam-formation center. Thus: a) the thickness of the thermal boundary layer, the local temperature pressure, the local specific heat flux, and the local coefficient of heat transfer change within considerable limits along the length of the heater; b) the greatest intensity of heat transfer is at the sites of action of the steam-formation centers, and the zone of action of the steam-formation center is 1-1.5 times the maximum diameter of the bubble;

1/2

USSR

BARANENKO, V. I. and SMIRNOV, G. F., Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 1, 1973, pp 170-176

c) at the sites of action of the steam-formation centers the temperature profiles are nearly linear; d) the thermal boundary layer is restored to a large degree at the centers where bubbles are forming which have large diameters and, consequently, large waiting periods. 5 figures. 1 table. 6 references.

2/2

SMIRNOV, G. F.

JPRS 55302

29 February 1972

UDC: 621.036.7+621.039.5

DISTINCTIVE FEATURES IN THE ANALYSIS OF CYCLES OF GAS-TURBINE ATOMIC POWER PLANTS

[Article by Candidate of Technical Sciences G.F. Smirnov, Engineer A.M. Klok, and Engineer Yu. I. Kalishevich, of the Odessa Technological Institute imeni M.V. Lomonosov; Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy. Energetika, Russian, No 12, December 1971, submitted 26 June 1969, pp 51-56]

Experience in the development of atomic power engineering in England, France, and Italy testifies to the prospectiveness of gas-graphite reactors.

The level of temperatures of 650-700°C and pressures of 30-40 atmospheres already achieved today [1] permits hoping for the use, in combination with atomic reactors, of gas-turbine installations working on a single-circuit scheme [2].

Few works have been devoted to the question of thermodynamic analysis of the cycles of single-circuit gas-turbine atomic power plants. At the same time, in the case of analysis of gas-turbine atomic power plants there are important differences as compares with such installations using organic fuel.

In spite of the fact that efficiency plays a smaller role for atomic power plants than for ordinary power plants, here also methods of thermodynamic analysis can prove to be necessary under certain conditions.

Depending on the purpose of the installation (stationary, transport, or special), the stages of analysis (preliminary, rough, etc), the presence of prototype design solutions on the components of the reactor, the geometry of the fuel element and technological channels, etc, the distinctive feature of the thermodynamic analysis can vary. Thus, for a stationary atomic power plant a condition of the analysis can be maximum efficiency at a fixed volume of the reactor core. For a transport atomic power plant the maximum efficience at a fixed volume of the entire installation as a whole can be such a condition. Besides

[I - USSR - X]

UDC: None

USSR

IM TKHEK-DE, RAUTIAN, S. G., SAPRYKIN, E. G., SMIRNOV, G. I., and SHALAGIN, A. M.

"Effect of Laser Field Polarization on Nonlinear Interference Effects"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 62, No 5, 1972, pp 1661-1665

Abstract: Experiments are described for investigating the spectral dependence of the absorption coefficient of a weak monochromatic field on the $3s_2$-$2p_4$ transition of neon in a strong field interacting with the transition when both fields are in the same direction. The observed effect is the dependence of the form and width of the absorption line for the weak field on the polarization of the fields. A frequency-stabilized He-Ne laser with pressure-selected modes of operation is used as the source of the strong field, its radiation being modulated by a mechanical interrupter. Further details of this rather complicated equipment are given together with a diagram, and the results of the experiment are interpreted. It is noted that the effect observed had been predicted by A. Dienes (Phys. Rev., 174, 400, 414, 1968). The authors are associated with the Semiconductor Physics Institute, Siberian Division of the USSR Academy of Sciences.

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UDC: 621.373.535(206.3)

USSR

ZHELNOV, B. L., SMIRNOV, G. I.

"A Gas Ring Laser With Naturally Active Cell"

Leningrad, Optika i Spektroskopiya, Vol 32, No 2, Feb 72, pp 388-391

Abstract: The authors consider the polarization characteristics of a gas ring laser with an isotropic element having natural optical activity placed in the cavity with an even number of mirrors. It is shown that linear polarization in each of the opposing waves as well as circular and elliptical polarization is possible, depending on the coefficient of nonlinear coupling of the circular field components on the Zeeman sublevels of the atom. The stability regions for circular and elliptical polarizations may overlap, causing hysteresis phenomena in transitions from one mode to another when there is a continuous variation in detuning of the resonator away from the frequency of the atomic transition. The authors thank V. S. Smirnov for repeated discussions during the work, and B. I. Troshin for the idea of the problem. One figure, bibliography of seven titles.

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USSR

KULIKOV, A. V. and SMIRNOV, G. I. (affiliate of Scientific Research Institute of Nuclear Physics of Moscow State University, Dubna); MKRTCHYAN, G. G. (Institute of Physics, Yerevan); et al (Joint Institute for Nuclear Research)

"Search for a New Type of Radioactivity in Al and W Targets Irradiated by 70 Gev Protons"

Moscow, Yadernaya Fizika, Vol. 13, No. 4, Apr 71, pp 786-790

Abstract: The first results of a new method proposed in 1970 by Pontekorvo for searching for hypothetical quasistable elementary particles which could be formed in high-energy collisions are reported. The method consists of the following: the possibility of such particles' sticking in the nuclear material can lead to favorable conditions for radioactivity of a "new type" characterized by the relatively high energy of the decay products (tens of Mev or more). The proposed method can be achieved by recording different forms of radiation; this study presents the first results of searches for "radioactivity" with the emission of high-

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USSR

DEM'YANOV, A. V., et al, Yadernaya fizika, Vol. 13, No. 4, Apr 71, pp 786-790

energy gamma-rays in Al and W targets irradiated for a long time (up to 34 days) by 70-Gev protons in the Serpukhov accelerator. One of the reasons for the rise of such gamma-rays can be the decay of new particles with the emission of π^0-mesons. The range of lifetimes from several hours to several years was investigated. No events with photon emission were observed. The upper limit of the nuclear cross section for the production of a "radioactive" quasinucleus which emits high-energy photons by 70-Gev protons is 10^{-38}-10^{-37} cm^2 for Al and 10^{-36}-10^{-35} cm^2 for W. This study was the first step in a search for the new type of metastable material. In terms of long-range planning, this series of experiments changes character in the area of lifetimes $\sim 10^{-10}$ sec; in addition to the search for new qualitative effects, it is possible to carry out quantitative studies of the properties of hypernuclei. This could be achieved in practice with the aid of a collective acceleration method which would yield an intensive beam of protons of extremely short duration ($\sim 10^{-11}$sec) and a high repetition frequency ($\sim$1000 Hz).

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UDC: 621.391

USSR

SMIRNOV, G. I.

"Data Transmission from Independent Sources in a Synchronous Communications System"

Tr. uchebn. in-tov svyazi. M-vo svyazi SSSR (Works of Academic Institutes of Communications. Ministry of Communications of the USSR), 1970, vyp. 51, pp 48-56 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5A21)

Translation: The author considers problems in the design of devices which can be used in transmitting information from several independent (unsynchronized) sources in a synchronous multichannel communications system. Block diagrams of the devices are given together with a description of their operating principle. Resumé.

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Construction

USSR

SMIRNOV, G. I., Editor-in-Chief

"Fresh Water Factory"

Moscow, Stroitel'naya gazeta, 5 Mar 71, p 4

Text: At the large distillation complex being built at the Krasnovodsk thermal electric powerplant the equipment installation phase has already begun. The plans for this unique fresh water factory were drawn up by Central Asiatic Department of the All-Union State Institute for the Planning of Electrical Equipment for Heat Engineering Structures.

Five installations, each as high as a 10-story building, are capable of producing about 700 tons of distilled water per hour. Part of this output will go to the central thermal electric power plant, and part to the homes of Krasnovodsk. A special station will be built for enriching the distilled sea water with the necessary salts and additives and making it palatable.

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1/2 051 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--INFLUENCE OF COLLISIONS ON THE LASING MODES OF A GAS RING LASER -U-

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CIRC ACCESSION NO--AP0124880

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALYSIS OF THE INFLUENCE OF PRESSURE ON THE LASING MODES OF A GAS RING LASER. ATOMIC COLLISIONS ARE TAKEN INTO ACCOUNT IN THE EQUATION OF MOTION OF THE TWO LEVEL DENSITY MATRIX OF THE ACTIVE MEDIUM. A LOW ENERGY SOLUTION TO THE MATRIX EQUATION IS OBTAINED IN THE FORM OF TWO OPPOSING TRAVELING WAVES. IT IS SHOWN THAT THE FREQUENCY RANGE IN WHICH OPPOSING TRAVELING WAVE MODES (WITH DIFFERENT AMPLITUDES) CAN EXIST INCREASES WITH INCREASING PRESSURE.

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002203110003-9"

USSR

UDC 539.4:624

MOROZ, L. R., SMIRNOV, G. N.

"Dynamic Calculation of Gravity-Type Sea Walls"

Sb. tr. Mosk. inzh.-stroit. in-t (Collected Works. Moscow Structural Engineering Institute), 1970, No 78, pp 4-17 (from RZh-Mekhanika, No 10, Oct 71, Abstract No 10V599)

Translation: A method of dynamic calculation of gravity-type sea walls is worked out on the basis of experimental studies under laboratory and semi-full scale conditions in the presence of a dynamic load which simulates the effect of broken waves and surf. The foundation was modeled by an optically active material (SKU-6 rubber) and by actual soil (sand). The nature of motion of the structure was determined for the case of external loads of varying intensity and duration. The relationship between the amplitude of displacement of the structure and the intensity of the external load was also determined for various load durations, as well as the nature of distribution of dynamic normal stresses in the base and the time dependence of this distribution, the relationship between dynamic

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USSR

MOROZ, L. R., SMIRNOV, G. N., Sb. tr. Mosk. inzh.-stroit. in-t, 1970, No 78, pp 4-17

normal stresses in the base and the impulse of external loads of various durations, and finally the effect which the inertness of the base has on the frequencies and amplitudes of oscillations of the structure, and also on the stressed state of the soil base. The model of an inertialess half space is used as the mathematical model of the soil base instead of the Winkler model. Fairly good agreement is observed between the values of the measured periods of natural oscillations of the fundamental tone of some actual sea walls and the values found by dynamic calculations. The results of calculations of these objects by the standard method and by the method proposed in the paper are compared. A. V. Ch.

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USSR UDC 517.946

IVANOV, V. T., SMIRNOV, G. P., and LUBYSHEV, F. V., Bashkir State University

"Ordinary and Inverse Boundary Value Problems for Heat Conductivity Equations"

Minsk, Differentsial'nyye Uravneniya, No 11, 1972, pp 2023-2028

Abstract: This paper considers an approximate-analytic method, the method of planes, for solving inverse boundary value problems. Using as an example the solution of the inverse boundary value problem for the simplest heat conductivity equation, the authors apply the differential-difference method. The method of planes is explored in an earlier paper published in the journal noted above (O. A. Liskovets, No 12, Vol 1, 1965). As for the heat conductivity equation considered in the present paper, it is

$$\frac{\partial u}{\partial t} = a^2\left(\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}\right) + q(t,x,y),$$

in the region of $|x| < \infty$, $c < y < d$, and $t > 0$, under the following initial boundary and conditions: $u(x,y,0) = \varphi(x,y)$, $u(x,c,t) = 0$, $u(x,d,t) = 0$. It is also assumed that the function q has the form $q(t,x,y) = f(y,t)\delta(x - x_0)$, where $\delta(x)$ is the Dirac delta function.

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USSR UDC 577.391

SMIRNOV, G. P., Orenburg State Medical Institute

"Effect of X-Ray Irradiation on Gas Exchange in Rats and Changes in the Basal Metabolism of Irradiated Animals Preliminarily Treated with 6-Methylthiouracil"

Moscow, Radiobiologiya, Vol 12, No 1, Jan/Feb 72, p 155

Abstract: An experiment was conducted with 57 white rats to study the effect of 6-methylthiouracil (MTU), a radioprotector, on gas exchange in irradiated animals. The rats were fed 500 mg/kg 6-MTU 12-15 hours before irradiation with 500 r. At the time of irradiation, gas exchange had increased by 24%. Phasic changes were observed in gas exchange during the course of radiation pathology. The maximum decrease in gas exchange (by 13.4%) was observed 1-3 days following irradiation. The basic metabolic rate increased by 17.7% by the 10th day, then gradually decreased. By the 30th day, gas exchange was 11.8% lower than the original metabolic level. Preliminary administration of 6-MTU did not affect the decline of metabolic processes, but did seem to play a part in a more rapid stabilization of gas exchange.

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USSR

UDC 546.8'261

KLIMASHIN, G. M., AVGUSTINIK, A. I., and SMIRNOV, G. V.

"The Carbonitride and Oxycarbide Phases of Titanium and Zirconium"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 8, No 5, 1972, pp 843-845

Abstract: Titanium and zirconium oxycarbides and carbonitrides are synthesized in a vaccuum of 10^{-3} - 10^{-5} mm Hg at 2020-2300° K over a broad concentration interval. The preparates synthesized are studied metallographically, chemically, and by x-ray methods. The areas of existence of single-phase solid solutions are established. It is concluded that the areas of existence of the oxycarbide and carbonitride phases decrease in the sequence from titanium to hafnium.

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USSR

UDC 541.123+546.831'261:541.12.03

AVGUSTINIK, A. I., KLIMASHIN, G. M., GOLIKOVA, O. A. and SMIRNOV, G. V., Leningrad Technological Institute imeni Lensovet, Department of the Chemistry and Technology of High-Grade Ceramics

"The Effect of Nitrogen on Certain Properties of Zirconium Carbide in the Homogeneity Region"

Ivanovo, Izvestiya Vysshikh Uchebnykh Zavedeniy, Khimiya i Khimicheskaya Tekhnologiya, Vol XIII, No 10, 1970, pp 1,389-1,392

Abstract: It is known that existing methods of preparing zirconium carbide (and also the monocarbides of the transition metals of groups IV-VI) do not yield products of desired purity, owing to the presence of unbound carbon (up to 1.5-2.0%), nitrogen and oxygen; but the effects of these impurities have not been well studied.

The authors made a roentgenographic and metallographic study of the specific effect of the presence of nitrogen in zirconium carbide.

Data were obtained on the relationship between nitrogen content and the

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USSR

AVGUSTINIK, A. I., et al, Izvestiya Vysshikh Uchebnykh Zavedeniy, Khimiy i Khimicheskaya Tekhnologiya, Vol XIII, No 10, 1970, pp 1,389-1,392

following aspects of zirconium carbonitrides: (1) crystal lattice parameter; (2) crystal lattice parameter, with constant carbon content; (3) electrical conductivity; (4) thermal emf; (5) melting temperature; (6) microhardness; and (7) thermal conductivity. All data are illustrated graphically.

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USSR

POSPELOVA, V. V., RAKHIMOVA, N. G., KOROLEVA, A. I., D'YAKOVA, Ye. I., KURNOSOVA, N. A., and SMIRNOV, G. V., Moscow Scientific Research Institute of Epidemiology and Microbiology

"New Forms of Kolibakterin -- a Preparation for Nonspecific Prophylaxis and Therapy of Intestinal Infections"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 6, 1970, pp 48-49

Abstract: Kolibakterin is a preparation of live bacteria of antagonistic E. coli M-17 strain. It has been used fairly successfully as a drug for nonspecific prophylaxis and therapy of acute dysentery and chronic colitis, and for the restoration of the normal intestinal microflora in various bacterial diseases. However, the form in which it was available -- a loose mass in vacuum ampules -- made tedious weighing and dissolving of individual doses necessary. Furthermore, the bacteria were partly destroyed in the stomach by hydrochloric acid. Early attempts to press the mass into tablets were unsuccessful, since the biological activity of the preparation rapidly decreased. A new method of obtaining kolibakterin in dry form and pressing it into tablets or packing it into gelatin capsules has been developed. Preliminary tests have shown that both the tablets and the capsules are as effective as the original preparation. The next step is to mechanize the procedure and to use acid-resistant capsules.

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